Section 6
Environmental Considerations

6.1 Air Quality

6.1.1 Introduction

Riverside Public Utilities (RPU) proposes to build and operate a nominal 96-megawatt (MW) simple-cycle power plant on a 12-acre fenced site within the City of Riverside, California. The proposed facility is referred to as the Riverside Energy Resource Center (RERC) Project (Project). RPU will develop, build, own and operate the facility. RERC will supply the internal needs of the City of Riverside during summer peak electrical demands and will serve the City's minimum emergency loads in the event RPU is islanded form the external transmission system. No power from RERC will be exported outside of the City.

This portion of the report describes existing air quality conditions, maximum potential impacts from the RERC, and the mitigation measures that keep these impacts below thresholds of significance. Sections 6.1.2 through 6.1.6 provide a foundation for determining what environmental standards the project must meet. Section 6.1.2 presents the air quality setting, including geography, topography, climate and meteorology. Section 6.1.3 provides an overview of ambient air quality standards that must be maintained. Section 6.1.4 discusses air quality in the vicinity of the proposed project. The affected environment and regulatory framework is analyzed in Section 6.1.5 and 6.1.6.

Section 6.1.7 discusses the environmental consequences of emissions from the project and describes the procedures used in assessing facility emissions and air quality impacts. Section 6.1.8 provides a similar discussion relative to facility construction activities and mitigation measures for construction and operating phases of the project are identified.

Section 6.1.9 includes air quality impact analyses for the construction and operating phases of the project. Numerous analysis results are presented to facilitate an understanding of project impacts under various operating scenarios. Section 6.1.10 provides an overview of screening level health risk assessments that were conducted to determine health impacts that may be attributed to construction and operation of the facility.

Section 6.1.11 provides an overview of conformity with federal, state and local air quality regulations. Section 6.1.12 concludes that the impacts from the proposed project can be mitigated to levels below significance. Section 6.1.13 includes a list of references used to support the analyses and findings contained in this report.

6.1.1.1 Project Description

The proposed site is owned by the City of Riverside and is located adjacent to the City of Riverside's Wastewater Treatment Plant (WWTP) in a light industrial/manufacturing area. The RERC will consist of two aero-derivative combustion turbine generators with

SCRs, an on-site substation, approximately 1.75 miles of 69kV transmission line, natural gas and water supply interconnection, and on-site administration building and warehouse. The power plant and associated administration building and warehouse will occupy approximately 8 of 12 acres with the additional 4 acres reserved for equipment storage and, construction parking. The entire plant perimeter will be fenced with a combination of chain-link fencing and architectural block walls.

6.1.2 Air Quality Setting

6.1.2.1 Geography and Topography

The project site is at an elevation of approximately 725 feet above sea level and is cut into an embankment that is approximately 755 feet high at its highest point. Bluffs exist north of the project across the river drainage at an elevation of approximately 800 ft. Otherwise flat terrain extends for many miles to the south and west of the project site.

6.1.2.2 Climate and Meteorology

Hot summers, mild winters, and small amounts of precipitation characterize the climate in the Riverside area. The major climatic controls in the Riverside area are the mountains on three sides and the semi-permanent Pacific High pressure system over the eastern Pacific Ocean.

Temperature, wind speed, and wind direction data have been recorded at a meteorological monitoring station near the project site. This station is operated at Mission Boulevard., approximately 4 miles northeast from the project site. In summer (June, July and August), daily high and low temperatures at Riverside average 92ºF and 62ºF respectively. In winter, average lows are about 42ºF, and average highs are about 68ºF.

Air quality is determined primarily by the type and amount of pollutants emitted into the atmosphere, the topography of the air basin, and the local meteorological conditions. In the project area, stable atmospheric conditions and light winds can produce conditions in which pollutants accumulate in the air basin when emissions are generated. The predominant winds in the region are shown in Appendix 6.1-E. As indicated in the figures, winds in the region generally are light and easterly in the winter, but strong and westerly in the spring, summer, and fall.

6.1.3 Overview of Air Quality Standards

The U.S. Environmental Protection Agency (U.S. EPA) has established national ambient air quality standards (NAAQS) for ozone, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with aerodynamic diameter less than or equal to10 microns (PM_{1O}), particulate matter with aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$), and airborne lead. Areas with air pollution levels above these standards can be considered "nonattainment areas" subject to planning and pollution control requirements that are more stringent than standard requirements.

In addition, the California Air Resources Board (CARB) has established standards for ozone, CO, NO_2, SO_2, sulfates, PM_{1O}, $PM_{2.5}$, airborne lead, hydrogen sulfide, and vinyl chloride at levels designed to protect the most sensitive members of the population, particularly children, the elderly, and people who suffer from lung or heart diseases.

State and national air quality standards consist of two parts: an allowable concentration of a pollutant, and an averaging time over which the concentration is to be measured. Allowable concentrations are based on the results of studies of the effects of the pollutants on human health, crops and vegetation, and, in some cases, damage to paint and other materials. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short time (one hour, for instance), or to a relatively lower average concentration over a longer period (8 hours, 24 hours or 1 month). For some pollutants there is more than one air quality standard, reflecting both short-term and long-term effects. Table 6.1-1 presents the NAAQS and California ambient air quality standards for selected pollutants. The California standards are generally set at concentrations that are lower than the federal standards and in some cases have shorter averaging periods.

U.S. EPA's new NAAQS for ozone and fine particulate matter went into effect on September 16, 1997. For ozone, the previous one-hour standard of 0.12 ppm was supplemented with an eight-hour average standard at a level of 0.08 ppm. Compliance with this standard will be based on the three-year average of the annual fourth-highest daily maximum eight-hour average concentration measured at each monitor within an area.

The NAAQS for fine particulates were also revised in several respects. First, compliance with the current 24-hour PM_{IO} standard will now be based on the 99th percentile of 24-hour concentrations of 24-hour concentrations at each monitoring area. Two new $PM_{2.5}$ standards were added: a standard of 15 $\mu g/m^3$, based on the three-year average of annual arithmetic means from single or multiple monitors (as available); and a standard of 65 $\mu g/m^3$, based on the three-year average of the 98th percentile of 24-hour average concentrations at each monitor within an area.

CARB has also adopted regulations implementing new California PM_{IO} and $PM_{2.5}$ standards. The new California annual average PM_{10} standard is 20 $\mu g/m^3$, and the new annual average $PM_{2.5}$ standard is 12 $\mu g/m^3$.

Table 6.1-1 Ambient Air Quality Standards

Pollutant	Averaging Time	California	National
Ozone	1-hour	0.09 ppm	0.12 ppm
	8-hour	-	0.08 ppm
Carbon monoxide	1-hour	20 ppm	35 ppm
	8-hour	9.0 ppm	9 ppm
Nitrogen dioxide	1-hour	0.25 ppm	-
	Annual average	-	0.0534 ppm

Pollutant	Averaging Time	California	National
Sulfur dioxide	1-hour 3-hour 24 hours Annual average	0.25 ppm - 0.04 ppm (105 μg/m^3) -	- 1300[a] μg/m^3 (0.5 ppm) 365 μg/m^3 (0.14 ppm) 80 μg/m^3 (0.03 ppm)
Suspended particulate Matter (10 micron)	24 hours Annual Arithmetic Mean	50 μg/m3 20 μg/m^3	150 μg/m3 50 μg/m^3
Suspended particulate Matter (2.5 micron)	24 hours Annual Arithmetic Mean	12 μg/m3 65 μg/m^3	15 μg/m^3 (3-year average)
Sulfates	24 hours	25 μg/m3	-
Lead	30 days Calendar Quarter	1.5 μg/m3 -	- 1.5 μg/m^3
Hydrogen sulfide	1-hour	0.03 ppm	-
Vinyl chloride	24-hour	0.010 ppm	-
Visibility Reducing Particles	8-hour (10am to 6pm PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.	-

6.1.4 Existing Air Quality

Data from ambient air monitoring stations, in accordance with South Coast Air Quality Management District (SCAQMD) guidance, were used to characterize air quality at the Riverside Energy Resource Center project site. These were chosen because of their proximity to the site and because they record area wide ambient conditions rather than the localized impacts of any particular facility. All ambient air quality data presented in this section were taken from South Coast Air Quality Management District publications and data sources. The closest monitoring station is located approximately 4 miles northeast of the Project on Mission Blvd. in the city of Riverside. This station monitors ozone, CO, NO_2, PM_{10}, $PM_{2.5}$, lead, SO_2 and sulfates. The Mission Boulevard data generally is used to represent existing air quality trends at the project site. Data from other nearby ambient stations is used where the Mission Boulevard data is incomplete or not available.

6.1.4.1 Ozone

Ozone is an end product of complex reactions between volatile organic compounds (VOCs) and oxides of nitrogen (NO) in the presence of intense ultraviolet radiation. VOCs and NO emissions from millions of vehicles and stationary sources, in combination with daytime wind flow patterns, mountain barriers, a persistent temperature inversion, and intense sunlight result in high ozone concentrations. For purposes of state and federal air quality planning, the South Coast Air Basin is a nonattainment area for ozone.

Maximum ozone concentrations at the Mission Boulevard monitoring station in Riverside are recorded throughout the year. Table 6.1-2 shows the annual maximum hourly ozone levels recorded at this station during the period from 1997-2002, as well as the number of days in which the state and federal standards were exceeded. The data show that the state ozone air quality standard is frequently exceeded.

Table 6.1-2 Ambient Ozone Levels (ppm) Riverside, California 1997-2003

	1997	1998	1999	2000	2001	2002	2003
Highest 1-hour average	0.19	0.20	0.142	0.140	0.143	0.155	0.169
Highest 8-hour average	0.13	0.17	0.11	0.113	0.120	0.124	0.112
Number of days exceeding:							
State standard (0.09 ppm, 1-hour)	89	70	38	41	41	56	80
Federal standard (0.12 ppm, 1-hour)	13	32	3	3	7	12	18
Federal standard (0.08 ppm, 8-hour)	55	57	27	29	34	38	62

Source: 1997-2002 - Air Quality Data, Annual Summary, South Coast Air Quality Management District

2003 – California Air Resources Board Trends Summary

6.1.4.2 Nitrogen Dioxide

Atmospheric NO_2 is formed primarily from reactions between nitric oxide (NO) and oxygen or ozone. NO is formed during high temperature combustion processes, when the nitrogen and oxygen in the combustion air combine. Although NO is much less harmful than NO_2, it can be converted to NO_2 in the atmosphere within a matter of hours, or even minutes, under certain conditions. For purposes of state and federal air quality planning, the South Coast Air Basin is in attainment for NO_2.

Table 6.1-3 shows the local annual maximum one-hour NO_2 levels recorded from 1997 through 2002, as well as the annual average level for each of those years. During this period, there have been no violations of the state 1-hour standard (0.25 ppm) or the federal annual average standard (0.053 ppm).

Table 6.1-3 Ambient Nitrogen Dioxide Levels (ppm) Riverside 1997-2003

	1997	1998	1999	2000	2001	2002	2003
Highest 1-hour average	.012	.10	.013	.10	.15	.10	0.099
Annual average	.026	.023	.026	.024	.025	.024	0.021
Number of exceedences:							
State standard (day) (0.25 ppm, 1-hour)	0	0	0	0	0	0	0
Federal standard (year) (0.053 ppm, annual)	0	0	0	0	0	0	0

Source: 1997 – 2002 - Air Quality Data, Annual Summary, South Coast Air Quality Management District
2003 – California Air Resources Board Trends Summary

6.1.4.3 Carbon Monoxide

CO is a product of incomplete combustion, principally from automobiles and other mobile sources of pollution. Industrial sources typically contribute less than ten percent of ambient CO levels. Peak CO levels typically occur during winter months, due to a combination of higher emission rates and stagnant weather conditions. For purposes of state and federal air quality planning, the South Coast Air Basin is classified as being in attainment for CO.

Table 6.1-4 shows the California and federal air quality standards for CO, and the maximum 1-hour and 8-hour average levels recorded at the Mission Boulevard monitoring station in Riverside during the period 1997-2003. Trends of maximum 8-hour and 1-hour average CO indicate that maximum ambient CO levels at Riverside Mission Boulevard have been consistently below the state and federal standards.

Table 6.1-4 Ambient Carbon Monoxide Levels (ppm) Riverside 1997-2000

	1997	1998	1999	2000	2001	2002	2003
Highest 8-hour average (Mission Blvd.)	5.8	4.6	4.4	4.3	3.43	3.0	3.67

	1997	1998	1999	2000	2001	2002	2003
Highest 8-hour average (Magnolia Ave.)	5.0	4.6	4.1	4.3	4.5	3.9	3.33
Highest 1-hour average (Mission Blvd.)	7	5	7	5	5	8	*
Highest 1-hour average (Magnolia Ave.)	11	6	7	9	6	7	*
Number of days exceeding:							
State standard (20 ppm, 1-hr)	0	0	0	0	0	0	0
State standard (9.0 ppm, 8-hr)	0	0	0	0	0	0	0
Federal standard (35 ppm, 1-hr)	0	0	0	0	0	0	0
Federal standard (9.5 ppm, 8-hr)	0	0	0	0	0	0	0

Source: 1997 – 2002 - Air Quality Data, Annual Summary, South Coast Air Quality Management District

2003 – California Air Resources Board Trends Summary

* 1-Hour CO high concentrations not yet published.

6.1.4.4 Sulfur Dioxide

SO_2 is produced when any sulfur-containing fuel is burned. Chemical plants that treat or refine sulfur or sulfur-containing chemicals also emit it. Natural gas contains negligible amounts of sulfur, while fuel oils contain much larger amounts. Because of the complexity of the chemical reactions that convert SO_2 to other compounds (such as sulfates), peak concentrations of SO_2 occur at different times of the year in different parts of California, depending on local fuel characteristics, weather, and topography. The South Coast Air Basin is considered to be in attainment for SO_2 for purposes of state and federal air quality planning.

Table 6.1-5 presents the state and federal air quality standards for SO_2 and the maximum levels recorded at the Riverside air monitoring station. Maximum 1-hour average and 24-hour average readings have been an order of magnitude below the state standard during this period. The federal annual average standard is 0.03 ppm; annual average SO_2 levels at this site have been less than well below the federal standard. Table 6.1.5 shows that for several years the maximum SO_2 levels generally have been less than the state standard.

Table 6.1-5 Ambient Sulfur Dioxide Levels (ppm) Riverside, California 1997-2003

	1997	1998	1999	2000	2001	2002	2003
Highest 1-hour average	.03	.02	.02	.11	.02	.02	*
Highest 24-hour average	.010	.008	.008	.041	.011	.002	0.012
Annual average	.0003	.0004	.0007	.0008	0.001	*	0.002
Number of days exceeding:							
State standard (0.25 ppm, 1-hr)	0	0	0	0	0	0	0
State standard (0.045 ppm, 24-hr)	0	0	0	0	0	0	0
Federal standard (0.5 ppm, 3-hr)	0	0	0	0	0	0	0
Federal standard (0.14 ppm, 24-hr)	0	0	0	0	0	0	0

Source: 1997 – 2002 - Air Quality Data, Annual Summary, South Coast Air Quality Management District

2003 – California Air Resources Board Trends Summary

* Data not published.

6.1.4.5 Particulate Sulfates

Particulate sulfates are the product of further oxidation of SO_2. The South Coast Air Basin is in attainment for the state standard for sulfates. There is no federal standard for sulfates. Table 6.1-6 presents maximum 24-hour average sulfate levels recorded at the Riverside, Mission Blvd. monitoring station for the period 1997-2002.

Table 6.1-6 Ambient Particulate Sulfate Levels ($\mu g/m^3$) Riverside 1997-2003

	1997	1998	1999	2000	2001	2002	2003
Highest 24-hour average (Mission Boulevard)	13.1	10.1	10.7	11.0	10.7	11.7	*
Highest 24-hour average (Magnolia Ave.)	10.4	12.8	10.6	10.2	9.7	10.5	*
Number of days exceeding state standard: (25 $\mu g/m^3$, 24-hour)	0	0	0	0	0	0	0

Source: California Air Quality Data, Annual Summary, South Coast Air Quality Management District

6.1.4.6 Fine Particulates (PM_{10} and $PM_{2.5}$)

Particulates in the air are caused by a combination of wind-blown fugitive dust; particles emitted from combustion sources (usually carbon particles); and organic, sulfate, and nitrate aerosols formed in the atmosphere from emitted hydrocarbons, sulfur oxides, and nitrogen oxides. In the South Coast Air Basin, there is a strong seasonal variation in particulate matter, with higher PM_{10} and $PM_{2.5}$ concentrations in the fall and winter months. In 1984, CARB adopted standards for fine particulates (PM_{10}), and phased out the total suspended particulate (TSP) standards that had previously been in effect. PM_{10} standards were substituted for TSP standards because PM_{10} corresponds to the size range of inhalable particulates related to human health. In 1987, U.S. EPA also replaced national TSP standards with PM_{10} standards. For air quality planning purposes, the South Coast Air Basin is considered to be in nonattainment of both federal and state PM_{10} standards. As discussed in Section 6.1.2 above, U.S. EPA issued new PM_{10} and $PM_{2.5}$ emission standards having an effective date of September 16, 1997.

Table 6.1.7 shows the current federal and state air quality standards for PM_{10}, maximum levels, and arithmetic annual averages recorded at the Riverside, Mission Boulevard ambient station from 1997 through 2003. Maximum 24-hour PM_{10} levels from Mission Boulevard regularly exceed the state standards, but have exceeded the federal standard twice since 1997.

Table 6.1-7 Ambient PM_{10} Levels ($\mu g/m^3$) Riverside, California 1997-2000

	1997	1998	1999	2000	2001	2002	2003
Highest 24-hour average (Mission Blvd.)	163	116	153	139	136	130	164
Highest 24-hour average (Norco/Corona)	158	93	136	129	109	78	116
Annual arithmetic mean (Mission Blvd.)	64.9	56.2	72.3	60.1	63.1	58.5	*

	1997	1998	1999	2000	2001	2002	2003
Annual arithmetic mean (Norco/Corona)	49.6	46.7	55.4	49.3	44.8	44.5	*
Number of days exceeding:							
State standard (Mission / Norco)	41/25	42/23	46/31	68/28	78/18	81/19	*
(50 *ug/m3,* 24-hour)							
Federal standard (Mission/Norco)	1/1	0/0	1/0	0/0	0/0	0/0	*
(150 *ug/m3,* 24-hour)							

Source: 1997 – 2002 - Air Quality Data, Annual Summary, South Coast Air Quality Management District

2003 – California Air Resources Board Trends Summary

* Data not published.

During 1998, CARB and local air pollution control districts and air quality management districts began establishing a comprehensive network of $PM_{2.5}$ monitoring sites. Table 6.1.8 shows the federal air quality standards for $PM_{2.5}$ and maximum levels recorded at the Mission Boulevard monitoring station during 1999-2003. $PM_{2.5}$ is measured only once every three days; so expected daily exceedences are three times the number of measured exceedences.

Table 6.1-8 Ambient $PM_{2.5}$ Levels ($\mu g/m^3$) Riverside, California 1999-2002

	1999	2000	2001	2002	2003
Highest 24-hour average (Mission Blvd.)	111.2	119.6	98	77.6	72.9
Highest 24-hour average (Magnolia Ave.)	89.9	79.3	74.9	75.5	59.5
Annual Arithmetic mean (Mission Blvd) (State standard=12 $\mu g/m^3$ Federal standard=15 $\mu g/m^3$)	30.9	28.2	31.1	27.5	*

	1999	2000	2001	2002	2003
Annual Arithmetic mean (Magnolia Ave.) (State standard=12 µg/m3 Federal standard=15 µg/m3)	26.9	25.5	28.3	27.1	*
Number of measured samples exceeding Federal standard (Mission/Magnolia) (65 µg/m3, 24-hour)	9/2	11/5	19/5	8/2	1/0

Source: 1999 – 2002 - Air Quality Data, Annual Summary, South Coast Air Quality Management District

2003 – California Air Resources Board Trends Summary

* Data not published.

6.1.4.7 Airborne Lead

The majority of lead in the air results from the combustion of fuels that contain lead. Until 25 years ago, motor gasoline contained relatively large amounts of lead compounds used as octane-rating enhancers, with the result that ambient lead levels were relatively high. Beginning with the 1975-model year, however, manufacturers began to equip new automobiles with exhaust catalysts, which are poisoned by the exhaust products of leaded gasoline. Thus, unleaded gasoline became the required fuel for an increasing fraction of new vehicles, and the phase out of leaded gasoline began. As a result, ambient lead levels decreased dramatically, and California air basins, including the South Coast Air Basin, have been in attainment of state and federal airborne lead standards for air quality planning purposes for about 10 years. Although the ambient lead standards are no longer violated, lead emissions from stationary sources still pose "hot spot" problems in some areas. As a result, CARB identified lead as a toxic air contaminant in 1997. The standard level is 1.5 µg/m3, measured on a 30-day average for the state, but a calendar quarter for the federal level. Table 6.1.9 summarizes airborne lead levels recorded at the Mission Blvd. monitor since 1997. Table 6.1.9 indicates that airborne lead levels have been well below the ambient air quality standard of 1.5 $\mu g/m^3$ for the period 1997 through 2002.

Table 6.1-9 Ambient Lead Levels ($\mu g/m^3$) Riverside, California 1997-2003

	1997	1998	1999	2000	2001	2002	2003
Highest monthly value	0.07	0.08	0.06	0.06	0.04	.03	*
Highest quarterly average	0.04	0.04	0.05	0.05	0.03	.02	*

Source: California Air Quality Data, Annual Summary, South Coast Air Quality Management District

6.1.5 Affected Environment

The U.S. EPA has responsibility for enforcing, on a national basis, the requirements of many of the country's environmental and hazardous waste laws. California is under the jurisdiction of U.S. EPA Region IX, which has its offices in San Francisco. Region IX is responsible for the local administration of U.S. EPA programs for California, Arizona, Nevada, Hawaii and certain Pacific trust territories. U.S. EPA's activities relative to the California air pollution control program focus principally on reviewing California's submittals for the State Implementation Plan (SIP). The SIP is required by the federal Clean Air Act to demonstrate how all areas of the state will meet the national ambient air quality standards within the federally specified deadlines (42 USC §7409, 7411).

The California Air Resources Board (CARB) was created in 1968 by the Mulford-Carrell Air Resources Act through the merger of two other state agencies. CARB's primary responsibilities are to develop, adopt, implement and enforce the state's motor vehicle pollution control program; to administer and coordinate the state's air pollution research program; to adopt and update as necessary the state's ambient air quality standards; to review the operations of the local air pollution control districts; and to review and coordinate preparation of the SIP for achievement of the federal ambient air quality standards [California Health & Safety Code (H&SC) §39500 et seq.].

When the state's air pollution statutes were reorganized in the mid-1960s, local air pollution control districts (APCDs) were required to be established in each county of the state (H&SC §4000 et seq.). There are three different types of districts: county, regional, and unified. In addition, special air quality management districts (AQMDs), with more comprehensive authority over nonvehicular sources as well as transportation and other regional planning responsibilities, have been established by the Legislature for several regions in California (H&SC §40200 et seq.).

Air pollution control districts and air quality management districts in California have principal responsibility for:

- Developing plans for meeting the state and federal ambient air quality standard
- Developing control measures for nonvehicular sources of air pollution necessary to achieve and maintain both state and federal air quality standards
- Implementing permit programs established for the construction, modification, and operation of sources of air pollution
- Enforcing air pollution statutes and regulations governing nonvehicular sources, and for developing employer-based trip reduction programs

Each level of government has adopted specific regulations that limit emissions from stationary combustion sources, several of which are applicable to this project. The agencies having permitting authority for this project are shown in Table 6.1.10. The applicable regulations and compliance with these requirements are discussed in more detail in the following sections. An application for a Permit to Construct will be filed with the South Coast Air Quality Management District (SCAQMD) at approximately the same time as the Small Power Plant Exemption (SPPE) application is filed with the California Energy Commission (CEC).

Table 6.1-10 Air Quality Agencies

Agency	Authority	Contact
U.S. EPA Region IX	PSD permit issuance, Enforcement	Gerardo Rios, Chief, Permits Office USEPA Region IX 75 Hawthorne Street San Francisco, CA 94105 (415) 744-1259
California Air Resources Board	Regulatory oversight	Mike Tollstrup, Chief Project Assessment Branch California Air Resources Board 2020 L Street Sacramento, CA 95814 (916) 322-6026
South Coast AQMD	Permit issuance, enforcement	Moshen Nazemi South Coast AQMD 21865 East Copley Drive Diamond Bar, CA 91765 (909) 396-3385

6.1.6 Laws, Ordinances, Regulations and Standards

6.1.6.1 Federal

The U.S. EPA implements and enforces the requirements of many of the federal environmental laws. U.S. EPA Region IX, which has its offices in San Francisco, administers federal air programs in California. The federal Clean Air Act, as most recently amended in 1990, provides U.S. EPA with the legal authority to regulate air pollution from stationary sources such as the RERC. U.S. EPA has promulgated the following stationary source regulatory programs to implement the requirements of the 1990 Clean Air Act:

Standards of Performance for New Stationary Sources (NSPS)

National Emission Standards for Hazardous Air Pollutants (NESHAPS)

Prevention of Significant Deterioration (PSD)

New Source Review (NSR)

Title IV: Acid Deposition Control

Title V: Operating Permits

National Standards of Performance for New Stationary Sources

Authority. Clean Air Act §111, 42 USC §7411; 40 CFR Part 60, Subpart GG

Purpose. Establishes standards of performance to limit the emission of criteria pollutants (air pollutants for which U.S. EPA has established national ambient air quality standards NAAQS) from new or modified facilities in specific source categories. The applicability of these regulations depends on the equipment size; process rate; and/or the date of construction, modification, or reconstruction of the affected facility. Only the Standards of Performance for Stationary Gas Turbines, which limit NO_X and SO_2 emissions from gas turbines, are applicable to the project. These standards are implemented at the local level with federal and state oversight.

Administering Agency. SCAQMD, with USEPA Region IX and CARB oversight.

National Emission Standards for Hazardous Air Pollutants

Authority. Clean Air Act § 112, 42 USC §7412; 40 CFR Part 63

Purpose. Establishes national emission standards to limit the emission of hazardous air pollutants (HAPs, or air pollutants identified by U.S. EPA as causing or contributing to the adverse health effects of air pollution but for which NAAQS have not been established) from facilities in specific source categories. Requires the use of maximum achievable control technology (MACT) for major sources of HAPs that are not specifically regulated or exempted under Part 63. Standards are implemented at the local level with federal oversight. A NESHAPS regulation has been proposed for gas turbines (40 CFR 63, Subpart YYYY) pursuant to Section 112 of the Clean Air Act. However, this regulation will not be applicable to the RERC project because the facility is not a major source of HAPs.

Prevention of Significant Deterioration Program

Authority. Clean Air Act §160-169A, 42 USC §7470-7491; 40 CFR Parts 51 and 52

Purpose. Requires preconstruction review and permitting of new or modified major stationary sources of air pollution to prevent significant deterioration of ambient air quality. Prevention of Significant Deterioration (PSD) applies to pollutants for which ambient concentrations do not exceed the corresponding NAAQS (i.e., attainment pollutants). The PSD program allows new sources of air pollution to be constructed, or existing sources to be modified, while preserving the existing ambient air quality levels, protecting public health and welfare, and protecting Class I areas (e.g., national parks and wilderness areas).

Administering Agency. U.S. EPA, Region IX.

New Source Review

Authority. Clean Air Act §171-193, 42 USC §7501 et seq.; 40 CFR Parts 51 and 52

Purpose. Requires preconstruction review and permitting of new or modified major stationary sources of air pollution to allow industrial growth without interfering with the attainment and maintenance of ambient quality standards. This program is implemented through SCAQMD Regulation XIII and enforced by SCAQMD with U.S. EPA oversight.

Administering Agency. SCAQMD, with U.S. EPA Region IX oversight.

Title IV-Acid Rain Program

Authority. Clean Air Act §401, 42 USC §7651 et seq.; 40 CFR Part 72

Purpose. Requires the monitoring and reporting of emissions of acidic compounds and their precursors. The principal source of these compounds is the combustion of fossil fuels. Therefore, Title IV established national standards to monitor, record, and in some cases limit SO_2 and NO_X emissions from electrical power generating facilities. These standards are implemented at the local level with federal oversight.

Administering Agency. SCAQMD, with U.S. EPA Region IX oversight.

Title V-Operating Permits Program

Authority. Clean Air Act § 501 (Title V), 42 USC §7661; 40 CFR Part 70

Purpose. Requires the issuance of operating permits that identify all applicable federal performance, operating, monitoring, record keeping, and reporting requirements. Title V applies to major facilities, Phase II acid rain facilities, subject solid waste incinerator facilities, and any facility listed by U.S. EPA as requiring a Title V permit. These requirements are administered by SCAQMD through SCAQMD Regulation XXX with U.S. EPA oversight.

Administering Agency. SCAQMD, with U.S. EPA Region IX oversight.

6.1.6.2 State

CARB was created in 1968 by the Mulford-Carrell Air Resources Act through the merger of two other state agencies. CARB's primary responsibilities are to develop, adopt, implement, and enforce the state's motor vehicle pollution control program; to administer and coordinate the state's air pollution research program; to adopt and update, as necessary, the state's ambient air quality standards; to review the operations of the local air pollution control districts; and to review and coordinate preparation of the State Implementation Plan (SIP) for achievement of the federal ambient air quality standards.

State Implementation Plan

Authority. Health & Safety Code (H&SC) §39500 et seq**.**

Purpose. Required by the federal Clean Air Act, the SIP must demonstrate the means by which all areas of the state will attain and maintain NAAQS within the federally mandated deadlines. CARB reviews and coordinates preparation of the SIP. Local districts must adopt new rules (and/or revise existing rules) and demonstrate that the resulting emission reductions, in conjunction with reductions in state and federally controlled mobile source emissions, will result in the attainment of NAAQS.

Administering Agency. SCAQMD, with CARB and USEPA Region IX oversight.

California Clean Air Act

Authority. H&SC §40910 - 40930

Purpose. Established in 1989, the California Clean Air Act requires local districts to attain and maintain both national and state ambient air quality standards at the "earliest practical date." Local districts must prepare air quality plans demonstrating the means by which the ambient air quality standards will be attained and maintained.

Administering Agency. SCAQMD, with CARB oversight.

Toxic Air Contaminant Program

Authority. H&SC §39650 – 39675

Purpose. Established in 1983, the Toxic Air Contaminant Identification and Control Act created a two-step process to identify toxic air contaminants and control their emissions. CARB identifies and prioritizes the pollutants to be considered for identification as toxic air contaminants. CARB assesses the potential for human exposure to a substance, while the Office of Environmental Health Hazard Assessment evaluates the corresponding health effects. Both agencies collaborate in the preparation of a risk assessment report, which concludes whether a substance poses a significant health risk and should be identified as a toxic air contaminant. In 1993, the Legislature amended the program to identify the 189 federal hazardous air pollutants as toxic air contaminants. CARB reviews the emission sources of an identified toxic air contaminant and, if necessary, develops control measures to reduce the emissions. There have been no measures adopted via the Toxic Air Contaminant Program that are applicable to this project.

Air Toxic "Hot Spots" Act

Authority. CA Health & Safety Code § 44300-44384; 17 CCR §93300-93347

Purpose. Established in 1987, the Air Toxics "Hot Spots" Information and Assessment Act supplements the toxic air contaminant program, by requiring the development of a statewide inventory of air toxics emissions from stationary sources. The program requires affected facilities to prepare (1) an emissions inventory plan that identifies relevant air toxics and sources of air toxics emissions; (2) an emissions inventory report quantifying air toxics emissions; and (3) a health risk assessment, if necessary, to characterize the health risks to the exposed public. Facilities whose air toxics emissions are deemed to pose a significant health risk must issue notices to the exposed population. In 1992, the Legislature amended the program to further require facilities whose air toxics emissions are deemed to pose a significant health risk to implement risk management plans to reduce the associated health risks. This program is implemented at the local level with state oversight.

Administering Agency. SCAQMD, with CARB oversight.

CEC and CARB Memorandum of Understanding

Authority. CA Pub. Res. Code § 25523(a); 20 CCR §1752, 1752.5, 2300-2309, and Div. 2, Chap. 5, Art. 1, Appendix B, Part (k)

Purpose. Establishes requirements in the CEC's decision-making process for an AFC or SPPE that assures protection of environmental quality.

Administering Agency. California Energy Commission.

6.1.6.3 Local

When the state's air pollution statutes were reorganized in the mid-1960s, local districts were required to be established in each county of the state. There are three different types of districts: county, regional, and unified. Local districts have principal responsibility for developing plans for meeting the NAAQS and California ambient air quality standards; developing control measures for nonvehicular sources of air pollution necessary to achieve and maintain both state and federal air quality standards; implementing permit programs established for the construction, modification, and operation of sources of air pollution; enforcing air pollution statutes and regulations governing nonvehicular sources; and developing programs to reduce emissions from indirect sources.

South Coast Air Quality Management District Attainment Demonstration Plans

Authority. H&SC §40914

Purpose. The SCAQMD plans define the proposed strategies, including stationary source and transportation control measures and new source review rules, that will be implemented to attain and maintain the state ambient air quality standards. The relevant stationary source control measures and new source review requirements are discussed with SCAQMD Rules and Regulations.

Administering Agency. SCAQMD, with CARB oversight.

South Coast Air Quality Management District Rules and Regulations

Authority. H&SC §4000 e eq., H&SC §40200 et seq., indicated SCAQMD Rules

Purpose. Establishes procedures and standards for issuing permits; establishes standards and limitations on a source-specific basis.

Administering Agency. SCAQMD with U.S. EPA and CARB oversight.

6.1.6.4 Summary of Applicable Local Requirements

This section summarizes applicable local SCAQMD air pollution requirements.

Authority to Construct

SCAQMD Rule 203 (Permits Required) specifies that any facility installing nonexempt equipment that causes or controls the emission of air pollutants must first obtain an Authority to Construct from the SCAQMD. Under Rule 1301 (New and Modified Stationary Source Review Rule), the SCAQMD's Final Determination of Compliance acts as an authority to construct for a power plant upon approval of the Project by the CEC.

SCAQMD Prohibitory Rules

The general prohibitory rules of the SCAQMD applicable to the Project include the following:

<u>Rule 401 - Visible Emissions:</u>

Prohibits visible emissions as dark or darker than Ringelmann No.2 for periods greater than three minutes in any hour.

<u>Rule 402 - Nuisance:</u>

Prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or that damage business or property.

<u>Rule 404 - Particulate Matter Emission Standards:</u>

Prohibits PM emissions in excess of 0.1 grains per dry standard cubic foot (gr/dscf).

<u>Rule 431.1- Sulfur Compounds:</u>

Prohibits the burning in equipment any gaseous fuel containing sulfur compounds calculated as H_2S, in excess of 40 ppm as measured over a four-hour period.

Rule 403 - Fugitive Dust Administrative Requirements for Control of PM_{10}: Sets forth definitions, applicability and administrative requirements for anthropogenic sources of PM_{10}.

New Source Performance Standards

SCAQMD Regulation IX (New Source Performance Standards) requires compliance with applicable federal standards of performance for new or modified stationary sources.

Subpart GG (Standards of Performance for Stationary Gas Turbines) applies to gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules per hour (Gj/hr) (10.15 MMBtu/hr) at higher heating value. The proposed new turbines have an hourly heat input that exceeds this threshold. The NSPS NOx emission limit is defined by the following equation:

$$STD = \frac{0.0150\ (14.4)}{Y} + F$$

where:

STD = allowable NOx emissions (percent volume at 15 percent O2 on a dry basis)

Y = manufacturer's rated heat rate at peak load (kilojoules per watt hour)

F = NOx emission allowance for fuel-bound nitrogen (assumed to be zero for natural gas)

Subpart Da (Standards of Performance for Electric Utility Steam Generating Units) applies to steam generating units that are capable of combusting more than 250 MMBtu per hour of fossil fuel. Since there are no duct burners or auxiliary boilers associated with the Project, Subpart Da is not applicable.

Review of New or Modified Sources

SCAQMD Rule 1301 (New and Modified Stationary Source Review Rule) implements the federal NSR program as the NSR requirements of the California Clean Air Act. The rule contains the following elements:

- Best available control technology (BACT)
- Emission offsets
- Air quality impact analysis (AQIA)

Regulation XX stipulates that a facility with the potential to emit more than 4 tons per year of NO_X is subject to the Regional Clean Air Incentives Market (RECLAIM). RECLAIM NSR implements Rule 2012 which implements distinct requirements for BACT, offsets, and air quality impact analysis for NO_X.

Best Available Control Technology

Best Available Control Technology (BACT) must be applied to any new or modified emissions unit resulting in an emissions increase of any nonattainment air contaminant, any ozone-depleting compound, or ammonia.

The SCAQMD defines BACT as the most stringent emission limitation or control technique that:

- Has been achieved in practice for such emissions unit and class of source; or
- Is contained in any State Implementation Plan approved by the U.S. EPA for such emissions unit category and class of source. A specific limitation or control technique shall not apply if the owner or operator of the proposed emissions unit demonstrates to the satisfaction of the APCO that such limitation or control technique is not presently achievable; or
- Is any other emission limitation or control technique, including process and equipment changes of basic and control equipment, found by the Air Pollution

Control Officer (APCO) to be technologically feasible for such class or category of sources or for a specific source, and cost-effective as determined by the APCO.

Emission Offsets

A new or modified facility with a potential to emit pollutants in excess of the SCAQMD offset thresholds shown in Table 6.1.11 must offset all emissions increases at a predetermined ratio. In most cases, offsets are provided at a ratio of 1.2:1. In the case of RERC, the only threshold exceedance expected would be for NO_X, which will require an offset ratio of 1.1:1 because it is subject to Regional Clean Air Incentives Market (RECLAIM) Rule 2005 – New Source Review.

Table 6.1-11 SCAQMD Offset Emission Thresholds

Pollutant	Threshold, lb/yr
NO_x	8,000
SO_2	8,000
CO	58,000
VOC	8000
PM	8000

Air Quality Impact Analysis

An SCAQMD air quality impact analysis must be conducted to evaluate impacts of emission increases from new or modified facilities on ambient air quality. Project emissions must not cause an exceedence of any ambient air quality standard or significantly add to an existing exceedence of an air quality standard.

In addition to the air quality impact analysis that is required by SCAQMD, a cumulative impact analysis may be required in accordance with the CEC application process. The cumulative impact analysis is intended to incorporate any recently permitted projects that have not yet been constructed. Conceivably, these projects could have a pending impact on air quality.

CEC Review

SCAQMD Rule 1301 establishes a procedure for coordinating SCAQMD review of power plants with the CEC AFC and SPPE processes. Under this rule, the applicant submits an SPPE application to CEC in conjunction with an application to SCAQMD for permit to construct and operate the facility. SCAQMD processes the permit application in coordination with CEC, but cannot proceed to issue a permit to construct the project until CEC grants the SPPE.

Toxic Risk Management

The SCAQMD's Risk Management Review Policy for Permitting New and Modified Sources provides a mechanism for evaluating potential impacts of air emissions of toxic substances from new, modified, and relocated sources in the SCAQMD. Rule 1401 requires a demonstration that the source will not adversely impact the health and welfare of the public. Rule 1401 requires that the maximum individual cancer risk (MICR) from any single source at the facility will not exceed $1x10^{-6}$ ($1x10^{-5}$ if TBACT is utilized) MICR is the estimated probability of a potential maximally exposed individual contracting cancer as a result of exposure to the source's toxic emissions. Rule 1401 also requires a demonstration of acute and chronic risks.

Prevention of Significant Deterioration

The SCAQMD prevention of significant deterioration (PSD) requirements apply, on a pollutant-specific basis, to any project that is a new major stationary source or a major modification to an existing major stationary source. A major source is a listed facility (one of 28 PSD source categories listed in the federal Clean Air Act) that emits at least 100 tons per year (tpy) of a pollutant. Because the facility is not one of the 28 listed categories, PSD applicability is based upon the 250 ton per year emission threshold..

The PSD program contains the following elements:

- Air quality monitoring
- Best available control technology (BACT)
- Air quality impact analysis
- Protection of Class I areas
- Visibility, soils, and vegetation impacts

The RERC project will consist of two LM6000 simple cycle peaking turbines fired on natural gas. Since RERC is not a steam electric plant, it is subject to the 250-tpy PSD threshold. emissions from the RERC project will be much less than 250 tpy; therefore, the RERC plant is not subject to PSD.

Federal Operating Permit

SCAQMD Regulation XXX (Federally Mandated Operating Permits) requires new major facilities and Phase II acid rain facilities to obtain an operating permit containing the federally enforceable requirements mandated by Title V of the 1990 Clean Air Act Amendments. A permit application for a new Title V facility must be submitted to the SCAQMD within 12 months of the commencement of operation of the new facility. The application must present a process description, all stationary sources at the facility, applicable regulations, estimated emissions, associated operating conditions, alternative operating scenarios, a facility compliance plan, and a compliance certification.

Acid Rain Permit

SCAQMD Regulation XXXI (Acid Rain Program) requires that certain subject facilities comply with maximum operating emissions levels for SO_2 and NO_x, and that all subject facilities must monitor SO_2, NO_x, and CO_2 emissions and exhaust gas flow rates. A Phase II acid rain facility, such as RERC, must obtain an acid rain permit as mandated by Title IV of the 1990 Clean Air Act Amendments. The application must present all relevant

Phase II sources at the facility, a compliance plan for each unit, applicable standards, and an estimated commencement date of operations.

Table 6.1-12 Regulations and Permits for Protection of Air Quality

Regulation	Purpose	Regulating Agency	Agency Action
Federal			
Clean Air Act (CAA) 160-169A and implementing regulation, Title 42 United States Code (USC) Title 40 CFR Parts 51 &52 (PSD)	Requires prevention of significant deterioration (PSD) review and facility permitting for construction of new or modified major stationary sources of air pollution. PSD review applies to pollutants for which ambient concentrations are lower than NAAQS.	USEPA	PSD is not triggered for the Riverside ERC project.
CAA 171-193, 42 USC 7501 et seq. (NSR)	Requires new source review (NSR) facility permitting for construction or modification of specified stationary sources. NSR applies to pollutants for which ambient-concentration levels are higher than NAAQS.	SCAQMD with USEPA oversight	Agency approval to be obtained before start of construction. Issuance of permit with conditions limiting emissions.
CAA 401 (Title IV), 42 USC 7651 (Acid Rain Program)	Requires monitoring of NO_2 and SO_2 emissions and purchase of SO_2 allowances.	SCAQMD with USEPA oversight	Issuance of Acid Rain monitoring plan after review of application
CAA 501 (Title V), 42 USC 7661 (Federal Operating Permits Program)	Establishes comprehensive permit program for major stationary sources.	SCAQMD with USEPA oversight	Issuance of Title V permit after review of application.
CAA 111, 42 USC 7411, 40 CFR Part 60 (NSPS)	Establishes national standards of performance for new stationary sources.	SCAQMD with USEPA oversight	Agency approval to be obtained before start of construction. Issuance of permit with conditions limiting emissions.

Table 6.1-12 Regulations and Permits for Protection of Air Quality (continued)

Regulation	Purpose	Regulating Agency	Agency Action
State			

H&SC 44300-44384; CCR 93300-93347 (Toxic "Hot Spot" Act)	Requires preparation and biennial updating of facility emissions inventory of hazardous substances; risk assessment.	SCAQMD with USEPA oversight	HRA submitted as part of SPPE application. After review issuance of permit limiting emissions
CA Public Resource Code 25523 (a); 20 CCR 1752, 2300-2309 (CEC & CARB Memorandum of Understanding)	Requires that CEC's decision of AFC include requirement to assure protection of environmental quality; AFC required to address air quality protection.	CEC	After project review, issuance of Final Certification with conditions limiting emissions.
Local			
SCAQMD Rule 401 (Visible Emissions)	Limits visible emission to no darker than Ringelmann No. 2 for periods greater than 3 minutes in any hour.	SCAQMD with CARB oversight	Agency approval to be obtained before start of construction. Issuance of permit with conditions limiting emissions.
SCAQMD Rule 402 (Public Nuisance)	Prohibits emissions in quantities that adversely affect public health, other businesses, or property.	SCAQMD with CARB oversight	Agency approval to be obtained before start of construction. Issuance of permit with conditions limiting emissions.
SCAQMD Rule 404 (Particulate Matter)	Limits PM from stationary sources.	SCAQMD with CARB oversight	Agency approval to be obtained before start of construction. Issuance of permit with conditions limiting emissions.
SCAQMD Rule 431.1 (Sulfur Compounds Emission)	Limits SO_2 from stationary sources.	SCAQMD with CARB oversight	Agency approval to be obtained before start of construction. Issuance of permit with conditions limiting emissions.

Table 6.1-12 Regulations and Permits for Protection of Air Quality (continued)

Regulation	Purpose	Regulating Agency	Agency Action
Local (continued)			
SCAQMD Regulation IX (New Source Performance Standards: 40 CFR 60, Subpart	Requires monitoring of fuel, other operating parameters; limits NO_X and SO_2 and PM emissions, requires source testing, emission monitoring,	SCAQMD with CARB oversight	Agency approval to be obtained before start of construction. Issuance of permit

Regulation	Purpose	Regulating Agency	Agency Action
GG, Stationary Gas Turbines)	and recordkeeping.		with conditions limiting emissions.
SCAQMD Rule 1301 (New and Modified Stationary Source Review)	NSR: Requires that preconstruction review be conducted for all proposed new or modified sources of air pollution, including BACT, emission offsets, and air quality impact analysis.	SCAQMD with CARB oversight	Agency approval to be obtained before start of construction. Issuance of permit with conditions limiting emissions.
SCAQMD Regulation XXX (Federally Mandated Operating Permits)	Implements operating permit requirements of CAA Title V.	SCAQMD with CARB oversight	Issuance of Title V permit after review of application.
SCAQMD Regulation XXXI (Acid Rain Program)	Implements acid rain regulations of CAA Title IV.	SCAQMD with CARB oversight	Issuance of Title V permit after review of application.

6.1.7 Environmental Consequences

6.1.7.1 Project Overview

The turbines will be operated as peaking units for up to 1,330 hours per turbine, per year. The proposed annual operating schedule for each turbine includes 910 normal operating hours, 200 startup hours, 200 shutdown hours, and an allowance of 20 hours for maintenance operations. Inlet air cooling will be used to maintain power output under warm ambient conditions. Emission control systems will be operational during all operations except a brief commissioning period, startups, shutdowns and limited maintenance operations. Maximum annual emissions are based on operation of the Project at maximum firing rates and include the expected maximum number of startup periods that may occur in a year.

The facility will not include a black-start engine. Black-start power will be provided by the nearby City of Riverside wastewater treatment facility. The turbines will be fired on pipeline quality natural gas and will be equipped with water injection, selective catalytic reduction (SCR) and CO oxidation systems to control NO_X and CO emissions. Reclaimed water from the neighboring wastewater treatment plant will be used for turbine cooling. Water will be demineralized prior to its injection into the turbines. The applicant anticipates using a water softener, followed by a high efficiency reverse osmosis system and a final crystalizer. The resulting brine waste will be stored in a wet form and trucked offsite for treatment or disposal. The facility will contain chillers and evaporative coolers to help cool the inlet water during summer months.

Aqueous ammonia will be used as a reactant in the SCR system. A 12,000-gallon tank will store a 19 percent aqueous ammonia solution at the facility. The ammonia delivery system includes a heated vaporization skid that can be initiated prior to cold-starts.

Startup emissions included in this application reflect the assumption that turbine startups may occur without preheating of the vaporization skid.

6.1.7.2 Proposed Equipment

The City proposes to construct two General Electric LM6000 Sprint gas turbines, rated at 49.8 MW, each. Both turbines will utilize water injection to control NO_X emissions to 25 ppmv at 15 percent O_2. Uncontrolled CO emissions are guaranteed to be less than 40 ppmv at 15 percent O_2, but often are less than 20 ppmv at 15 percent O_2. To further reduce NO_X and CO emissions from the turbines, water injection will be combined with selective catalytic reduction (SCR) technology and a CO catalyst to be fabricated by ATS Express, Inc. SCR and CO catalysts are considered BACT, and are proven technology to reduce NO_X and CO emissions. The City proposes to control NO_X emissions to 2.5 ppmv at 15 percent O_2, with ammonia (NH_3) slip at 5 ppmv at 15 percent O_2. CO emissions will be controlled to 6 ppmv at 15 percent O_2 and VOC emissions will be controlled to less than 2 ppmv at 15 percent O_2. Overall, the proposed emission rates reflect recently permitted simple-cycle projects in California, and are believed to reflect the lowest achievable emission rates for simple cycle turbines rated above three megawatts.

SCR relies upon injecting NH_3 vapors into the flue gases, which then pass through a catalyst material to reduce NO_X to elemental nitrogen and water. An aqueous ammonia solution of less than 20 percent ammonia will be used instead of a more concentrated solution or anhydrous ammonia to reduce the hazard associated with a potential accidental release. The aqueous solution will be transported to the site via a tanker truck, regulated by the California Department of Transportation (Caltrans). The aqueous ammonia solution will be stored in a 12,000-gallon above ground tank with secondary containment. The NH_3 vaporization skid includes pre-heaters to speed SCR effectiveness during cold starts. NH_3 emissions resulting from the use of SCR will be limited to 5 ppmv, based upon SCAQMD BACT standards.

Water used for injection will be cooled to approximately 45°F in order to improve power performance and to reduce emissions. The facility will contain two chillers and one cooling tower that are exempt from SCAQMD permit requirements.

Tables 6.1.13 through 6.1.16 contain summaries of equipment specifications. Additional equipment information is contained in Appendix 6.1-A.

Table 6.1-13 Equipment Summary GE LM 6000 Gas Turbine RERC

Specification	Description
Manufacturer:	General Electric
Model:	LM 6000 Sprint PC
Rating:	49.8 MW

Specification	Description
Fuel:	Pipeline natural gas
Fuel Consumption:	.467 MMcf/hr @full load
Water Injection Rate:	27,851 lb/hr
Exhaust Flow:	Approximately 575,520 acfm @ full load, including 18,200 acfm quench air
Stack Temperature:	830^{o} F @ full load with quench air injection

Table 6.1-14 Equipment Summary Cooling Tower RERC

Specification	Description
Manufacturer:	Evapco
Model:	AT 314-0772
Rating:	3,130.4 tons
Rated Flow:	5590 GPM
Estimated Max. Evaporation Rate:	108.93 GPM
Dimensions:	71’8” L x 13’11.25” W x 18’3.5” H
Exhaust Diameter:	3 @ 13’
Air Flow:	613,000 ACFM
Exhaust Temperature:	90^{o} F

Table 6.1-15 Equipment Summary Gas Turbine Emission Control Systems RERC

Specification	Description
Manufacturer:	ATS Express
SCR Catalyst:	Cormtech, Inc. Valadium-based ceramic honeycomb 31.75” d x 106.125” w x 78.5’ h 90% Conversion Efficiency

Specification	Description
CO Catalyst:	Engelhard, Inc. precious metal carrier on aluminum 95% Conversion Efficiency
Catalyst Space Velocity:	SCR – 315350, CO – 205000
Catalyst Life;	25,000 hrs
Ammonia Storage Capacity:	12,000 gal.
Ammonia Throughput:	76 lb/hr
Quench Air Addition:	18,200 acfm
Final Exhaust Flow:	575,520 acfm (including quench air)
Stack Height:	80 ft
Stack Dimensions:	13 ft inside diameter
Exhaust Temperature:	788°F at low load, 830°F @ full load
Catalyst Temperature Performance Range:	SCR: 485°F – 1112°F CO: 500°F – 1250°F

Table 6.1-16 Equipment Summary Ammonia Storage Tank RERC

Specification	Description
Configuration:	Above ground, horizontal
Material - Color:	White
Capacity:	12,000 gal.
Fluid:	19% Aqueous ammonia
Consumption:	76 lb/hr – 0.7 gal/min

6.1.7.3 Facility Operating Criteria Pollutant Emissions

The proposed project will be the construction of a peaking power plant. The new equipment will consist of two General Electric LM6000 gas turbines, each rated at 49.8 MW (nominal at average site design conditions) and a three (3) cell pre-fabricated, pre-engineered cooling tower used for the inlet air chillers. Natural gas will be the only fuel consumed during plant operation. There will be no distillate fuel oil firing at RERC. Typical specifications for the natural gas fuel are shown in Table 6.1-16.

Natural gas combustion results in the formation of NO_X, $S0_X$, reactive organic gases (ROG), PM_{10}, $PM_{2.5}$ and CO. Because natural gas is a clean burning fuel, there will be minimal formation of combustion PM and $S0_X$. The gas turbines will be equipped with water injection that minimizes the formation of NO_X. To further reduce NO_X and CO emissions, selective catalytic reduction (SCR) and oxidation catalyst control systems will be utilized.

Various other pollutants will also be emitted by the facility, including ammonia (NH_3), which is used as a reactant by the SCR systems to control NO_X. Emissions of all of the criteria and noncriteria (toxic) pollutants have been characterized and quantified in this application.

Selected Emission Factors for Gas Turbines and Cooling Tower

Table 6.1.17 contains a summary of gas turbine emission and fuel throughput factors used to estimate potential emissions during commissioning, startup and normal operations of the turbines. Emission factors reflect manufacturer guarantees and current BACT determinations for simple cycle turbines. SO_X factors were derived from *U.S. EPA AP-42* dated April 2000. ROG emission factors reflect manufacturer estimates and are in compliance with CARB's *Guidance for Power Plant Siting and Best Available Control Technology*, dated September 1999. Excerpts of these reference documents and detailed emission calculations are contained in Appendix 6.1-B.

Table 6.1-17 Criteria Pollutant Emission Factors and Hourly Emission Rates *

Pollutant	Uncontrolled Emission Factor (lb/mmcf)	Controlled Emission Factor (lb/mmcf)	Hourly Emissions During Commissioning and Maintenance Operations (lb/hr)	Hourly Emissions During Startup Operations (lb/hr)	Hourly Emissions During Typical Operations (lb/hr)
ROG	4.026	2.013	1.88	1.02	0.94
SO_x	3.468	3.468	1.62	1.48	1.62
CO	98.351	14.753	45.93	13.20	6.89
PM10	6.424	6.424	3.00	2.74	3.00
NO_x	96.2099	9.621	44.93	16.47	4.49

*(Per Turbine) Riverside Energy Resource Center

Emission factors for the evaporative cooling towers are estimated to be 0.01 pound of PM_{10} and $PM_{2.5}$ per hour. The emission rate is based upon U.S. EPA methods specified in *AP-42*. The emission factor reflects water circulation rates and drift rates for the proposed tower, and total dissolved solid rates from local water analyses.

Turbine Commissioning / Maintenance Emissions

Table 6.1.18 contains a summary of anticipated hourly, daily and annual emissions during commissioning operations. The hourly emissions reflected in Table 6.1-18 also reflect emissions that could occur during limited maintenance operations after commissioning operations are complete. During turbine commissioning operations of 200 hours, it is conceivable that the units will operate at low loads, without the use of SCR, but with water injection in full effect. For emission calculations, fuel throughput is assumed to be 100 percent of rated capacity. NO_X and CO concentrations are assumed to be 25 ppmv and 42 ppmv, respectively. A spreadsheet showing commissioning emissions for the project is contained in Appendix 6.1-B.

Table 6.1-18 Criteria Pollutant Emissions Summary One Gas Turbine *

	MHC lbs/hr	MDC lbs/day	APTE Tons/yr.
ROG	1.88	45.12	0.19
SO_x	1.62	38.889	0.16
CO	45.93	1102.32	4.59
PM_{10} / $PM_{2.5}$	3.00	72.00	0.30
NO_x	44.93	1078.32	0.45

Note: 24 hours/day, 200 hours total. * Commissioning Hours Riverside Energy Resource Center

Turbine Startup/Shutdown Operations and Emissions

During startup operations, the turbines are assumed to operate at slightly elevated NO_X and CO average concentration rates due to the phased effectiveness of SCR and CO oxidation. Fuel consumption during startup operations will be slightly lower than during typical operations.

Table 6.1.19 contains estimated potential emissions from each turbine resulting from startup operations. Appendix 6.1-B also contains a summary of expected uncontrolled emissions during the first tem minutes of turbine operation. Hourly emissions reflect a 10-minute process during which fuel consumption and power output rise to 100 percent of rated capacity. NO_X emissions are at 25 ppmvd @ 15 percent O_2 through the first five minutes of operations. During the sixth minute of operation, sync idle load is achieved and NO_X concentrations begin to climb to approximately 65 ppmv @ 15 percent O_2 at approximately the seventh minute of operation. During the seventh minute, water injection is initiated to meet a NO_X concentration of 25 ppmvd @ 15 percent O_2. Full load is achieved at the tenth minute. Overall NO_X emissions are estimated by the turbine vendor to be 2.5 pounds during the first ten-minutes of operation.

CO emissions start out at approximately 180 ppmv at 15 percent O_2 during the first minute of operation, then decline rapidly during the sixth minute of operation. By the seventh minute, CO concentrations are approximately 20 ppmv at 15 percent O_2, and remain at that level into normal operations. Overall CO emissions are estimated by the vendor to be 3.9 pounds during the first ten-minutes of operation.

The proposed SCR system includes a heated vaporization skid that, if initiated in advance of turbine startup, can allow full operation and effectiveness of the SCR system during the tenth minute of operation. Emissions assumed for the purpose of this application, reflect the possibility that turbine startup cannot be delayed until the vaporization skid is initiated. The resulting estimated startup emissions reflect an additional 30-minute period during which SCR and CO oxidization systems become fully effective. Daily emissions reflect four startup events per turbine, per day. Annual emissions reflect 200 startup hours per turbine, per year. A spreadsheet showing startup emissions for the project is contained in Appendix 6.1-B.

Table 6.1.20 includes a summary of shutdown emissions for each turbine at the facility. The turbine vendor estimates that the shutdown process takes approximately eight minutes. Upon initiation of the shutdown process, ammonia injection will be discontinued. Water injection will be discontinued approximately seven minutes into the shutdown process. NO_X and CO emissions during the eight-minute period are estimated to be 2.7 pounds and 5.21 pounds, respectively. Normal operating emission rates are assumed to occur during the preceding 52 minutes of the shutdown hour. Daily emissions reflect four shutdown events per turbine, per day. Annual emissions reflect 200 startup hours per turbine, per year. A spreadsheet showing startup emissions for the project is contained in Appendix 6.1-B.

Table 6.1-19 Criteria Pollutant Emissions Summary One Gas Turbine - Startup *

	U-EF Lbs/MMcf	C-EF lbs/MMcf	AHU lbs/hr	AHC lbs/hr	MHU lbs/hr	MHC lbs/hr	MDU lbs/day	MDC lbs/day	AA lbs/yr	APTE tons/yr	30DA lbs/day
ROG	3.98	2.41	1.17	0.71	1.68	1.02	6.7	4.1	142	0.10	4.1
SO_x	3.52	3.52	1.04	1.04	1.48	1.48	5.9	5.9	207	0.15	5.9
CO	108.65	31.36	32.02	9.24	45.74	13.20	183.0	52.8	1848	1.32	52.8
PM_{10} / $PM_{2.5}$	6.52	6.52	1.92	1.92	2.74	2.74	11.0	11.0	384	0.27	11.0
NO_x	95.16	39.13	28.04	11.53	40.06	16.47	160.2	65.9	2306	1.65	65.9

* Startup Operations Riverside Energy Resource Center

Table 6.1-20 Criteria Pollutant Emissions Summary One Gas Turbine: Shutdown *

	U-EF	C-EF	AHU	AHC	MHU	MHC	MDU	MDC	AA	APTE	30DA
	lbs/MMcf	lbs/MMcf	lbs/hr	lbs/hr	lbs/hr	lbs/hr	lbs/day	lbs/day	lbs/yr	tons/yr	lbs/day
ROG	3.5974	2.1842	1.18	0.71	1.68	1.02	6.7	4.1	143	0.10	4.1
SO_x	3.4690	3.4690	1.13	1.13	1.62	1.62	6.5	6.5	227	0.16	6.5
CO	97.9443	23.9400	32.02	7.83	45.74	11.18	183.0	44.7	1565	1.12	44.7
PM_{10} / $PM_{2.5}$	6.4240	6.4240	2.10	2.10	3.00	3.00	12.0	12.0	420	0.30	12.0
NO_x	85.7816	14.1413	28.04	4.62	40.06	6.60	160.2	26.4	925	0.66	26.4

*Shutdown Operations Riverside Energy Resource Center

Normal Operations and Emissions

The City proposes to limit annual operations to 1,330 hours per year for each turbine, including 200 startup/shutdown events and 20 hours of maintenance operations per year for each turbine. This would leave an allowance for 910 hours per year under normal operations for each turbine. This restricted operating schedule will also ensure that emissions of pollutants other than NO_X will remain below SCAQMD emission offset thresholds. During normal operations, the units are assumed to operate at rated capacity with SCR and CO oxidation in full operation. NO_X and CO emission rates will be controlled to 2.5 ppmv and 6 ppmv, respectively.

Table 6.1.21 contains a summary of potential emissions resulting from each turbine during normal operations. Hourly emissions reflect full utilization of SCR and CO oxidation systems. Daily emissions reflect an assumed 16 potential hours under normal operations per turbine. Annual emissions reflect a limited schedule of 910 hours per year under normal operations per turbine. Detailed emission calculation spreadsheets are contained in Appendix 6.1-B.

Table 6.1-21 Criteria Pollutant Emissions Summary One Gas Turbine: Normal *

	U-EF lbs/MMBtu	C-EF lbs/MMBtu	AHU lbs/hr	AHC lbs/hr	MHU lbs/hr	MHC lbs/hr	MDU lbs/day	MDC lbs/day	AA Lbs/yr	APTE tons/yr	30DA lbs/day
ROG	4.026	2.013	1.79	0.89	1.88	0.94	30.1	15.0	813	0.43	15.0
SO_x	3.4680	3.4680	1.54	1.54	1.62	1.62	25.9	25.9	1400	0.74	25.9
CO	98.3512	14.7527	43.63	6.55	45.93	6.89	734.9	110.2	5956	3.13	110.2
PM_{10} / $PM_{2.5}$	6.4240	6.4240	2.85	2.85	3.00	3.00	48.0	48.0	2594	1.37	48.0
NO_x	96.2099	9.6210	42.68	4.27	44.93	4.49	718.9	71.9	3884	2.04	71.9

* Normal Operations Riverside Energy Resource Center

Evaporative Cooling Tower Emissions

Table 6.1.22 contains a summary of hourly, daily and annual emissions from the cooling towers. Maximum daily emissions reflect an operating schedule of 24-hours per day. Annual emissions reflect an operating schedule of 1,330 hours per year.

Table 6.1-22 Criteria Pollutant Emissions Summary One Evaporative Cooler *

	U-EF lbs/hr	C-EF lbs/hr	AHU lbs/hr	AHC lbs/hr	MHU lbs/hr	MHC lbs/hr	MDU lbs/day	MDC lbs/day	AA Lbs/yr	APTE tons/yr	30DA lbs/day
PM_{10}	0.02	0.02	0.02	0.02	0.02	0.02	0.48	0.48	27	0.013	0.48

* 1330 Hours per year Riverside Energy Resource Center

Combined Operations and Emissions

Table 6.1.23 contains a summary of estimated maximum hourly, daily and annual emissions for the entire facility during a normal operating year. The total maximum hourly emissions listed in Table 6.1.23 reflect normal operating conditions for ROG, SO_x and PM. For NO_X and CO, maximum hourly operating conditions reflect maintenance operations. Daily emissions reflect up to 19 hours of normal operations and 5 hours of maintenance operations, which reflect an assumed maximum level of uncontrolled emissions that may occur once commissioning operations, are complete. The 30DA emissions reflect SCAQMD calculation methodology for determining offset requirements. SCAQMD offsets for pollutants other than NO_X are to be provided based upon the maximum daily emissions and adjusted only to reflect the number of operating days per month, divided by 30 days. For this application, maximum daily operations are assumed to be 24-hours, and maximum operating days are assumed to be 30 days in a peak month, with the exception of maintenance operations, which would be averaged over 5 days per month.

Commissioning emissions are not factored into the maximum hourly, daily and annual emissions reflected in Table 6.1.23 for NO_X and CO. Estimated first-year potential NO_X emissions are 17.69 tons, due to the allocated 200-hour commissioning period. Estimated first year potential CO emissions are approximately 19.87 tons due to commissioning operations.

Table 6.1-23 Criteria Pollutant Emissions Summary Facility Total RERC

ROG	MHU	MHC	MDU	MDC	AA	APTE	30DA
	(lbs/hr)	(lbs/hr)	(lbs/day)	(lbs/day)	(lbs/yr)	(tons/yr)	(lbs/day)
Normal Operations	3.8	1.9	60.2	30.1	1,625	0.86	30.1
Startup	3.4	2.0	13.4	8.1	284	0.20	8.1
Shutdown	3.4	2.0	13.4	8.2	286	0.20	8.2
Maintenance	3.8	3.8	18.8	18.8	53	0.04	2.5
Total	3.8	3.8	90.2	54.5	2,248	1.30	46.4
SOx	**MHU**	**MHC**	**MDU**	**MDC**	**AA**	**APTE**	**30DA**
	(lbs/hr)	(lbs/hr)	(lbs/day)	(lbs/day)	(lbs/yr)	(tons/yr)	(lbs/day)
Normal Operations	3.2	3.2	51.8	51.8	2,800	1.5	51.8
Startup	3.0	3.0	11.9	11.9	415	0.3	11.9
Shutdown	3.2	3.2	13.0	13.0	454	0.3	13.0
Maintenance	3.2	3.2	16.2	16.2	45	0.0	2.2
Total	3.2	3.2	77.7	77.7	3,714	2.1	77.7
CO	**MHU**	**MHC**	**MDU**	**MDC**	**AA**	**APTE**	**30DA**
	(lbs/hr)	(lbs/hr)	(lbs/day)	(lbs/day)	(lbs/yr)	(tons/yr)	(lbs/day)
Normal Operations	91.9	13.8	1469.8	220.5	11,912	6.3	220.5
Startup	91.5	26.4	365.9	105.6	3,696	2.6	105.6
Shutdown	91.5	22.4	365.9	89.4	3,130	2.2	89.4
Maintenance	91.9	91.9	459.3	459.3	1,286	0.9	61.2
Total	91.9	91.9	2204.6	721.1	20,025	12.1	415.5

PM10 / PM2.5	MHU (lbs/hr)	MHC (lbs/hr)	MDU (lbs/day)	MDC (lbs/day)	AA (lbs/yr)	APTE (tons/yr)	30DA (lbs/day)
Normal Operations	6.00	6.00	96.00	96.00	5,187	2.73	96.00
Startup	5.49	5.49	21.95	21.95	768	0.55	21.95
Shutdown	6.00	6.00	24.00	24.00	840	0.60	24.00
Maintenance	6.00	6.00	30.00	30.00	84	0.06	4.00
Evaporative Cooler	0.02	0.02	0.48	0.48	27	0.013	0.48
Total	6.02	6.02	144.48	144.48	6,906	3.953	142.48

NO_x	MHU (lbs/hr)	MHC (lbs/hr)	MDU (lbs/day)	MDC (lbs/day)	AA (lbs/yr)	APTE (tons/yr)	30DA (lbs/day)
Normal Operations	89.9	9.0	1437.8	143.8	7,768	4.09	143.8
Startup	80.1	32.9	320.5	131.8	4,613	3.3	131.8
Shutdown	80.1	13.2	320.5	52.8	1,849	1.3	52.8
Maintenance	89.9	89.9	449.3	449.3	1,258	0.9	59.9
Total	89.9	89.9	2156.6	620.0	15,488	9.603	328.4

Note: Daily emissions for two turbines reflect the following:

ROG, CO, NO_x – 5 hours maintenance, 19 hours normal operation per turbine

SO_x, PM_{10} – 24 hours normal operation per turbine

30DA reflects SCAQMD method of determining offset requirements.

6.1.7.4 Facility Operations Toxic Pollutant Emissions

Table 6.1.24 provides a summary of the toxic emission factors as well as hourly and annual potential emissions from the proposed gas turbines. The estimates are based upon an input rating of 0.467 MMcf/hr and an annual operating schedule of 1,330 hours per turbine. Ammonia emissions reflect guaranteed slip rates for the SCR system. For other toxic pollutants, emissions reflect factors that are referenced in the California Air Toxics Emissions Factors (CATEF) database or *AP-42*. A control efficiency factor of 85 percent is applied to all pollutants, except ammonia, to reflect the operation of the oxidization unit.

Table 6.1.25 provides a summary of toxic emissions that may be emitted from the evaporative cooling tower. Toxic emission factors for the evaporative cooling tower reflect the use of recycled water from a nearby wastewater treatment plant, MSDS for typical treatment products, and calculation methods outlined in U.S. EPA's AP-42, Section 13.4 (1/95). Additional toxic emissions information can be found in Appendix 6.1-C.

Table 6.1-24 Gas Turbine Toxic Pollutant Emissions Summary *

	Emissions (per turbine)		**Emissions (total)**	
Compound	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
Acetaldehyde	2.95E-03	3.84E+00	5.91E-03	7.68E+00
Acrolein	4.68E-04	6.08E-01	9.35E-04	1.22E+00
Ammonia	3.33E+00	4.32E+03	6.65E+00	8.65E+03
Benzene	8.65E-04	1.12E+00	1.73E-03	2.25E+00
Butadiene (1,3)	3.16E-05	4.10E-02	6.31E-05	8.21E-02
Ethylbenzene	2.36E-03	3.06E+00	4.71E-03	6.13E+00
Formaldehyde	5.21E-02	6.77E+01	1.04E-01	1.35E+02
Hexane	1.87E-02	2.43E+01	3.73E-02	4.85E+01
Napthalene	9.37E-05	1.22E-01	1.87E-04	2.44E-01
PAH'S (No Napthalene)	1.64E-04	2.13E-01	3.27E-04	4.25E-01
Propylene	1.44E-01	1.87E+02	2.88E-01	3.75E+02
Propylene Oxide	3.44E-03	4.48E+00	6.89E-03	8.96E+00
Toluene	9.87E-03	1.28E+01	1.97E-02	2.57E+01
Xylene	4.68E-03	6.09E+00	9.37E-03	1.22E+01
Total Toxic Emissions	3.56E+00	4.63E+03	7.13E+00	9.27E+03

* (Per turbine, based upon 1330 hours per year) Riverside Energy Resource Center

Table 6.1-25 Evaporative Cooling Tower Toxic Pollutant Emissions Summary *

Compound	Concentration (ppm)	Rate (%)	Drift (lbs/hr)	Emissions (per tower) (lbs/yr)	(tons/yr)
Arsenic	0.018	0.001	5.04E-07	6.55E-04	3.27E-07
Cadmium	0.003	0.001	8.39E-08	1.09E-04	5.45E-08
Chloride	0.201	0.001	5.62E-06	7.31E-03	3.65E-06
Chromium	0.015	0.001	4.20E-07	5.45E-04	2.73E-07
Chromium (hexavalent)	0.005	0.001	1.40E-07	1.82E-04	9.09E-08
Copper	0.081	0.001	2.27E-06	2.95E-03	1.47E-06
Dichloroethene	0.013	0.001	3.64E-07	4.73E-04	2.36E-07
Lead	0.012	0.001	3.36E-07	4.36E-04	2.18E-07
Manganese	0.054	0.001	1.51E-06	1.96E-03	9.82E-07
Nickel	0.015	0.001	4.20E-07	5.45E-04	2.73E-07
Trichloroethene	0.010	0.001	2.80E-07	3.64E-04	1.82E-07
Zinc	0.321	0.001	8.98E-06	1.17E-02	5.84E-06
Total Toxic Emissions			2.09E-05	2.72E-02	1.36E-05

* (Based upon 1330 hours per year) Riverside Energy Resource Center

6.1.7.5 Facility Environmental Impact Mitigation Measures

The following measures will be implemented to mitigate air quality impacts resulting from the operation of the generating station. These measures are typically implemented through SCAQMD Regulations and enforced, accordingly. Section 6.1.9 of this report provides an overview of the project's conformity with those regulations.

- Fuel Selection – The proposed gas turbines will burn only natural gas. No on-site diesel black-start engine is proposed for the project. Black-start power will be provided via a digester gas-fired engine and generator located at a neighboring facility.
- Best Available Control Technology – The turbines will be equipped with SCR to control NO_x emissions to a level of 2.5 ppmv at 15 percent O_2. Aqueous ammonia, rather than anhydrous ammonia, will be used as a reactant in the SCR system. The use of aqueous ammonia will reduce the risk of accidental releases of ammonia into the atmosphere during shipping, transfer and storage. An oxidization catalyst will be installed to reduce CO emissions by approximately 85 percent to 6 ppmv at 15 percent O_2. The catalyst will also significantly reduce reactive organic gas emissions and toxic pollutants from the gas turbines. The proposed technology reduces emissions to levels consistent with projects that have recently been approved by CEC and that are significantly lower than projects that have recently been permitted by California air districts.

- Emissions Offsets – Increases in emissions of criteria pollutants will be offset in one of two manners. For NO_X emissions the applicant will purchase offset credits that reflect emission reductions that have occurred elsewhere in the South Coast Air Basin. Emission increases for other pollutants are below SCAQMD offset thresholds, so the applicant is eligible to receive offset credits directly from SCAQMD reserves pursuant to SCAQMD Regulation XIII. The offsets come from otherwise unclaimed emission decreases from facility closures and permit expirations. Prior to making the credits available for new sources, they are discounted by 20% to 80%. Additionally, when SCAQMD applies the credits to a new source, it does so at a ratio pf 1.2:1. In order to offer the offset exemption to small emission sources, SCAQMD periodically submits demonstration to U.S. EPA that no net increase in emissions occurs when netted across the South Coast Air Basin in order to allow the reserved offsets to be granted.

6.1.8 Construction Operations

Construction of the proposed generating facility is segregated into two components. The first component is the facility in which the turbines will be located. The facility will be located on a parcel of land of approximately 15 acres, of which approximately 12 acres will be graded and improved. The remaining 1.3 acres reflects an embankment cut several years ago when earth was extracted, moved offsite and used as cover at a nearby landfill. Most earthmoving activities are expected to occur during the first two months of the project. It is estimated that construction will commence in October and peak construction activity in terms of fuel consumption and construction equipment activity will occur in November 2004.

Construction will commence with removal of minimal scrub and several decomposed granite boulders. The boulders will be hauled off-site. There will be no rock crushing at the facility. Grading to reshape the terrain of the parcel will occur, but because the facility has recently been excavated and graded, minimal additional grading is expected. Once grading is complete, preparation work on foundations for major equipment will commence. Delivery of major equipment is expected to commence in December 2004 and continue for several months as additional equipment is delivered and installed. During this period, administrative and mechanical facilities will also be constructed. The turbines are expected to be ready for commissioning in late March or early April of 2005.

The second component of the project is the construction of approximately 1.75 miles of transmission line. Approximately 55 existing wooden utility poles will be replaced with new steel and/or wooden poles. The line will follow along Payton Avenue southward until it meets Jurupa Avenue. From that point, it will follow along Jurupa Avenue to the existing Mt. View substation. Construction will likely be completed by three crews of three to four people. The first crew will kick off construction by boring holes near existing power poles. The holes will be approximately three feet wide and typically 15 to 20 feet deep. A flatbed truck will be used to transfer the new poles to the various installation sites. The second crew will direct-embed new poles in the holes using a mobile crane and then backfill with concrete. The third crew will follow and transfer the existing lines to the new poles. A bucket truck will be used to transfer the lines to the new poles. Construction will be completed by cutting the existing wood poles below grade and removing them from the area. The excess dirt displaced during the operation will either be spread along the area surrounding the pole, or loaded into a dump truck to be removed. On average, one pole is expected to be placed per day, although the three crews will be at three different locations each day.

6.1.8.1 Facility Construction Criteria Pollutants

Two categories of emissions are classified for the construction of the turbine facility. The first category of emissions includes those emissions that will be emitted at the construction site. These emissions include combustion emissions from construction equipment, and fugitive particulate emissions from road dust, earthmoving operations and wind erosion. The second category of emissions directly related to the turbine facility construction project includes regional onroad emissions from construction worker passenger vehicles and from delivery vehicles.

On-site Criteria Pollutant Emissions

Table 6.1.26 provides a summary of estimated maximum daily on-site construction emissions for the turbine facility construction project. It is estimated that peak fuel consumption will coincide with peak earthmoving. Peak monthly fuel consumption is estimated to be 6,214 gallons. Two distinct and sequential phases of work will occur during the month of peak activity. The first phase is site grading and earthmoving operations. The second phase is construction of the turbine pads and facilities in preparation for facility equipment installation. Fuel consumption for grading operations is estimated to be 307 gallons per day in November. Fuel consumption for the subsequent construction operations is estimated to be 245 gallons per day. Because fuel consumption during grading activities is higher than that of subsequent construction activities, and because fugitive dust emissions are typically highest during earthmoving operations, the grading phase of the project was used to determine maximum daily emissions. Appendix 6.1-D contains detailed emission calculations, projected construction schedules and an overview of typical construction equipment.

Combustion emissions from construction equipment reflect a daily diesel fuel consumption rate of approximately 304 gallons per 8-hour workday and gasoline consumption of approximately 3 gallons per day. It is estimated that even if construction operations exceed a standard 8-hour workday, such exceedence would not occur during the peak (earthmoving) phase of the Project.

Combustion emissions from construction equipment were calculated using a CEC-approved spreadsheet. Calculations within the spreadsheet reflect U.S. EPA emissions quantification methods that supported the agency's proposed 2002 rulemaking activities for non-road compression-ignition engines as well as established methodology for determining emissions from gasoline-fueled construction equipment (NR-009b). The emission calculations reflect the impacts of using ultra low sulfur fuel in engines that are certified to meet EPA/CARB Tier 1 emission standards, although it is conceivable that some lower-emitting Tier II could be in service at the project site. The calculations also reflect typical engine operating loads for construction equipment. Diesel engines account for 100 percent of the projected daily combustion-related PM_{10} emissions of 3.89 pounds during the peak activity month. It is assumed that these emissions are also primarily $PM_{2.5}$.

Emissions from unpaved road dust, grading, loading and erosion reflect the construction schedule that was prepared by the applicant. These emissions were calculated using the *South Coast AQMD California Environmental Quality Act (CEQA) Air Quality Handbook*.

Table 6.1-26 On-site Daily Criteria Pollutant Construction Emissions (lbs/day)

Riverside Energy Resource Center	NOx	CO	VOC	SOx	PM10
Construction Equipment Combustion Emissions	60.30	30.49	5.60	0.06	3.89
Unpaved Road Travel Fugitive PM Emissions					1.50
Grading / Bulldozing Fugitive PM Emissions					9.94
Earth Loading Fugitive PM Emissions					1.81
Disturbed Soil Wind Erosion PM Emissions					0.09
Total Max. Pounds per Day	60.30	30.49	5.60	0.06	17.23

Table 6.1.27 provides a summary of on-site construction-related emissions for the duration of the construction project. Emissions reflect the same factors and methodology used to estimate daily construction emissions. The project schedule commences in October 2004 with most activity occurring in November 2004 and activities to occur through May 2005. Combustion-related emissions from construction equipment reflect projected fuel throughput of approximately 26,600 gallons of diesel fuel and approximately 600 gallons of gasoline. Total PM_{10} emissions from fuel combustion are 426 pounds, which consists of 414 pounds from diesel combustion and 10 pounds from gasoline combustion.

PM_{10} emissions from earthmoving operations reflect the same calculation methodology used to determine maximum daily emissions and estimated activity levels over the duration of the project. Total PM_{10} emissions from on-site, noncombustion activities are estimated to be approximately 671 pounds. Combined with emissions from fuel combustion, total PM_{10} for the project is estimated to be 1,097 pounds (0.5 ton).

Table 6.1-27 On-site Project Criteria Pollutant Construction

Riverside Energy Resource Center Emissions (lbs/project and tons/project)	**NOx**	**CO**	**VOC**	**SOx**	**PM10**
Construction Equipment Combustion Emissions	5445	3879	695	6	426
Unpaved Road Travel Fugitive PM Emissions					181
Grading / Bulldozing Fugitive PM Emissions					395
Earth Loading Fugitive PM Emissions					81
Disturbed Soil Wind Erosion PM Emissions					14
Total Pounds per Project	5445	4794	769	7	1097
Total Tons per Project	2.7	2.397	0.385	0.003	0.5

Offsite Construction-related Emissions

During construction of the facility, additional emissions will be generated due to worker commute trip and delivery vehicles. These emissions will occur on a regional basis. Table 6.1.28 includes a summary of daily maximum on-highway emissions from these sources. Table 6.1.29 includes a summary of on-highway emissions over the duration of the project. Detailed emissions calculations and supporting data are contained in Appendix 6.1-D.

Estimated emissions reflect a workforce of 50 construction workers, no carpooling and an average roundtrip commute distance of 30 miles on peak days. The assumptions made for the assessment are more conservative than those discusses elsewhere in this report in order to ensure that maximum daily impacts are reasonably forecasted. Ten visitor trips to the site per day are also estimated to occur, with a roundtrip commute distance of 30 miles. The total number of commute trips by workers and visitors is estimated by multiplying 60 maximum daily trips by 154 project workdays. The product is reduced by 25 percent to reflect a reduced workforce during October and during the final months of the project. The emissions in tables 6.1.28 and 6.1.29 also reflect heavy-duty truck trips to the project site. Truck activity may include delivery of equipment and supplies as well as removal of soil/rock from the site. For this analysis, all trucks are assumed to be diesel-fueled.

Travel distances to and from the site are assumed to be comprised of 5 percent local street miles, 5 percent collector street miles, and 90 percent freeway miles. Workers and visitor vehicles are assumed to be 50 percent light duty passenger, and 50 percent light duty truck. Heavy-duty trucks serving the project are assumed to be diesel-fueled. Emissions were calculated using EMFAC 2002 and reflect fleet average emission rates for the South Coast Air Basin during the winter 2004. Emission rates (lb/mile) were determined for light duty passenger vehicles, light duty trucks, and heavy-duty diesel trucks by dividing total daily basin-wide emissions, by the number of basin-wide miles in the EMFAC BURDEN report. The PM_{10} emissions from vehicles include tire wear and brake wear.

PM_{10} emissions also include road dust that is disturbed by vehicle traffic. These emissions were calculated in accordance with the *South Coast AQMD California Environmental Quality Act (CEQA) Air Quality Handbook* using the same assumptions regarding road travel that were used to calculate on-road exhaust emissions.

Table 6.1-28 Daily Regional On-highway Criteria Pollutant Emissions

Riverside Energy Resource Center					
(lbs/day and tons/day)	**NOx**	**CO**	**VOC**	**SOx**	**PM10**
Passenger Vehicle - Combustion Emissions	6.48	58.86	6.12	0.04	0.29
Delivery Truck Combustion Emissions	13.68	1.04	0.43	0.14	0.28
Passenger Vehicle - Paved Road Dust					7.69
Delivery Truck - Paved Road Dust					110.90
Total (lbs/day)	20.16	59.90	6.55	0.18	119.16

Table 6.1-29 Regional On-highway Criteria Pollutant Emissions

Riverside Energy Resource Center					
(lbs/project and tons/project)	**NOx**	**CO**	**VOC**	**SOx**	**PM10**
Passenger Vehicle - Combustion Emissions	748	6,798	707	22	44
Delivery Truck Combustion Emissions	2,107	161	67	4	33
Passenger Vehicle - Paved Road Dust					1,184
Delivery Truck - Paved Road Dust					17,078
Total Pounds per Project	2,855	6,959	774	28	18,348
Total Tons per Project	1.4	3.5	0.4	0.01	9.2

6.1.8.2 Transmission Line Construction Emissions

Construction of the transmission line is expected to commence in January 2005. Table 6.1.30 includes a summary of daily emissions of criteria pollutants from the transmission line project. Table 6.1.31 includes a summary of criteria pollutant emissions that are expected to occur during the life of the transmission line construction project. Emissions were calculated using the same methods that were used to estimate emissions during construction of the power generating facility and reflect the construction strategy that is summarized in section 6.1.6 of this document. Maximum daily fuel consumption for the transmission line construction phase is estimated to be 91 gallons of diesel fuel and 7 gallons of gasoline. Total fuel consumption during the 55-day project is estimated to be approximately 415 gallons of diesel fuel and 280 gallons of gasoline.

Estimated transmission line construction emissions reflect the assumption that new power poles will be installed at a rate of approximately one per workday and that the project will be completed in 55 workdays. Because the construction projects will be completed by three crews working in sequence, the daily emissions reflected in Table 6.1.30 are distributed among three sequential power pole sites. Likewise, total projected emissions occur sequentially over the 55-day project, beginning at one end of the line on day 1 and ending at the other end of the line on day 55. Fugitive emissions are minimized because the power line is located alongside a paved road and because minimal earthmoving activities are expected to occur. Total project disturbed soil wind erosion emissions reflect an assumption that soil at any location may remain disturbed for up to ten days. The results included in Tables 6.1-30 and 6.1-31 exclude related on-highway emissions. Detailed transmission line and related on-highway emission calculation spreadsheets, construction schedules and equipment lists are in Appendix 6.1-E.

Table 6.1-30 Transmission Line Daily Construction Criteria Pollutant Emissions

Riverside Energy Resource Center (lbs/day)	**NOx**	**CO**	**VOC**	**SOx**	**PM10**
Construction Equipment Combustion Emissions	15.13	12.20	1.81	0.02	0.8928
Unpaved Road Travel Fugitive PM Emissions					0.0001
Grading/Bulldozing Fugitive PM Emissions					0.1110
Earth Loading Fugitive PM Emissions					0.0532
Disturbed Soil Wind Erosion PM Emissions					0.0082
Total Pounds per Day	15.13	12.20	1.81	0.02	1.07

Table 6.1-31 Transmission Line Total Construction Criteria Pollutant Emissions

Riverside Energy Resource Center (lbs/project)	**NOx**	**CO**	**VOC**	**SOx**	**PM10**
Construction Equipment Combustion Emissions	780	562	88	1	44.831
Unpaved Road Travel Fugitive PM Emissions					0.006
Grading/Bulldozing Fugitive PM Emissions					6.103
Earth Loading Fugitive PM Emissions					2.395
Disturbed Soil Wind Erosion PM Emissions					0.454
Total Pounds per Project	780	562	88	1	53.8
Total Tons per Project	0.39	0.28	0.04	0.001	0.027

6.1.8.3 Mitigation of Air Quality Impacts from Construction Operations

Environmental impacts from construction operations will be mitigated through CEC-specified requirements and good management practices. The following measures are examples of steps that may be applicable for the project.

- Fuel Selection - Ultra-low sulfur fuel is available in the South Coast region and will be used in construction equipment.
- Construction Equipment – To the extent practical, construction will be conducted using EPA-certified non-road engines. These engines are expected to have lower PM and NO_X emissions than similar non-certified models.
- Dust Suppression – Water will be applied to the construction site to reduce fugitive emissions during work hours.
- On-road Road Dust Control – If warranted, the facility will include a track-out control device. If on-road dust becomes problematic, truck tires may be washed prior to exiting the facility. Street sweeping activities on the adjoining roads may also be conducted to minimize road dust emissions.

6.1.9 Air Quality Impact Analysis

Air Quality Impact Analyses were conducted to demonstrate the significance of the project's impacts and to demonstrate compliance with local air quality regulations. One set of analyses was completed for various operating scenarios for the facility, including commissioning operations, startup operations and normal operations. The short-term analyses for commissioning operations also serve as short-term analyses for subsequent maintenance operations. A screening level fumigation analysis was also completed as well as an analysis of the impacts from facility construction activities. The methodology and results of each analysis are summarized in the following sections.

CEC policy also dictates that a cumulative impact analysis should be conducted to assess the potential impacts of the project, when combined with recently permitted projects that have not yet been constructed. CEC and SCAQMD conducted a search of all permits issued within a six-mile radius within the last year and found that no permits that would constitute an emissions increase have been issued within a one-year period. CEC subsequently concluded that the cumulative impact analysis is not warranted. Correspondence related to the search and CEC's determination are included in Appendix 6.1-G.

6.1.9.1 Air Quality Modeling Methodology – Plant Operations

The air dispersion modeling was conducted to provide down-wind emission concentration estimates from the project. The concentrations were subsequently used in the air quality impact analysis to demonstrate compliance with SCAQMD Rule 1303 (b)(1) and in the health risk assessment contained in Section 6.8 of this report.

The Industrial Source Complex-Short Term 3 (ISCST3) air dispersion model was used to estimate ambient down-wind pollutant concentrations from the project. The ISCST3 air dispersion model is a steady-state Gaussian plume model capable of evaluating multiple sources, different source types, and complex terrain features. The ISCST3 air dispersion model is recommended by both the U.S. EPA and the CARB for stationary source air dispersion modeling projects. Air dispersion modeling files are in Appendix 6.1-E.

The air dispersion model was run at actual emission rates reflecting worst-case operating scenarios for PM_{10} and $PM_{2.5}$. For other pollutants, the model was normalized to an emission rate of 1.0 g/sec. The resulting model output was then used to conduct the ambient air quality assessment and health risk assessment. The model was run for applicable averaging periods. Adjustments were made to the annual emission estimates to reflect the proposed operating schedule of 1,330 hours per year.

Meteorological Data

The meteorological data from the Riverside, California Station was used in the ISCST modeling runs. All meteorological data used in the analysis was preprocessed and supplied by the SCAQMD. The air district requires that its preprocessed meteorological data be used for all analyses used to demonstrate compliance with local air quality regulations and federal regulations that are locally administered.

Building Downwash Effects and Stack Heights

The building down-wash effects and exhaust stack heights were evaluated in the Industrial Source Complex-Short Term 3 (ISCST3) model for wind direction building induced downwash. Building dimensions were taken from the facility plot plan. The building features and stack heights were used as inputs into the Building Profile Input Program (BPIP) model, which writes a file comprised of building projected widths and heights in 36 wind sectors, as required by ISCST3. This information is then used to calculate pollutant concentrations influenced by building induced downwash.

Urban and Rural Processing Options

The site was evaluated to determine if the urban or rural dispersion coefficients should be used in the ISCST3 model. Since urban areas typically have considerably more surface roughness and surfaces that absorb heat, atmospheric dispersion can be somewhat different compared to rural areas. For this project, the urban dispersion routine was used in accordance with SCAQMD modeling guidelines.

Modeling Options

The modeling options included the use of the standard regulatory default options with the exception of "calm-processing", which was disabled in accordance with SCAQMD modeling guidelines, which ensures that calm periods are included in the dispersion calculations. All other standard regulatory default options were used.

Stack Parameters

Two gas turbines and one cooling tower were included in the analysis. Stack parameters utilized for the project were derived from manufacturer's specifications and site-specific engineering diagrams. Table 6.1.32 includes a summary of the gas turbine stack parameters used in the model. Both gas turbines are identical units. Table 6.1.33 includes a summary of the cooling tower parameters used in the analysis.

Table 6.1-32 Exhaust Stack Release Parameters Gas Turbines RERC

Stack Parameter	English Units		Metric Units	
UTM Coordinates Turbine #1			4582969.0 3757943.6	E Meters N Meters
UTM Coordinates Turbine #2			458269.0 3757980.1	E Meters N Meters
Emission Rate (normalized pollutants)	7.94	lbs/hr	1.0	g/sec
Emission Rate (PM per turbine)	3.0	lbs/hr	0.378	g/sec
Base Elevation	725	Ft	221.1	m
Height	80	Ft	24.4	m
Inner Diameter	156	In	3.96	m
Exhaust Temperature	830	deg F	716.48	deg K
Exhaust Flow Rate	575,520	acfm	16,287.2	acmm
Exhaust Velocity	72.3	ft/sec	22.0	m/s

Table 6.1-33 Exhaust Stack Release Parameters Evaporative Cooling Tower

Stack Parameter	English Units		Metric Units	
UTM Coordinates (center cell)			458296.0	E Meters
			3757958.6	N Meters
Emission Rate (PM)	0.01	lbs/hr	0.001	g/sec
Base Elevation	725	Ft	221.1	m
Height	18.3	Ft	5.58	m
Inner Diameter	13	Ft	3.96	m
Exhaust Temperature	90	deg F	255.4	deg K
Exhaust Flow Rate	204,33	acfm (per cell)	5786.07	acmm (per cell)
Exhaust Velocity	25.66	ft/sec (per cell)	7.82	m/s (per cell)

Receptor Overview

The modeling receptor grid used for this analysis consisted of several "nested" Cartesian coordinate systems. The first 2,000 meters surrounding the site includes 30 meter receptor spacing. Next, the grid extends an additional 3,000 with 100 meter receptor spacing. The final 5,000 meters of the 10,000-meter grid has 200 meter spacing. Specific receptors include only identification of the worst-case Maximally Exposed Individual (MEI) (i.e., First Highest). The MEI is a hypothetical point off-site that represents the most conservative receptor location and is located within 2,000 meters of the facility.

Terrain

The terrain in the project area is elevated, therefore the ISCST3 model was run in the "complex" terrain mode and digital terrain data was imported into the model. Data from the USGS Riverside West, Corona North, and Fontana quadrangles were utilized.

Air Dispersion Modeling Results

Air dispersion modeling results are summarized in Table 6.1.34. Both the MEI and the first highest residential receptor points are at the same grid location. Additional information regarding the air dispersion modeling can be found in Appendix 6.1-F.

Table 6.1-34 Air Dispersion Modeling Results Summary RERC

	Maximum Concentrations ($\mu g/m^3$ @ 1.0 g/s)				
Receptor	1-Hour	3-Hour	8-Hour	24-Hour	Annual
MEI (UTM East 458796.0) (UTM North 3760343.5)	5.82660	5.74174	4.05330	2.34810	0.24320

6.1.9.2 Ambient Air Quality Impacts – Facility Operations

Appendix 6.1-G contains the results of an air quality impact analysis (AQIA) that was conducted to evaluate the projects potential impact on ambient air quality. The pollutants analyzed included the following:

- Nitrogen Dioxide (NO_2)
- Carbon Monoxide (CO)
- Particulate Matter (PM_{10} and $PM_{2.5}$)
- Sulfur Dioxide (SO_2) and Sulfate (as SO_X)

A NO_X-to-NO_2 conversion factor of 0.59 was used to conduct the annual NO_2 impact analysis in accordance with SCAQMD guidance. No adjustment was applied to the hourly NO_2 analysis. Total SO_X emissions were used to represent the sulfates and SO_2.

The AQIA included the use of ISCST3 dispersion model results in Section 6.1.7.1 to determine ambient down-wind pollutant ground-level concentrations ($\mu g/m^3$)/(1.0g/s), which were then multiplied by the individual pollutant emission rates (g/s) for all pollutants except PM. For PM impacts, actual hourly emissions from the three sources were used input into the model to determine final $\mu g/m^3$ values. The analysis incorporates the maximum concentrations calculated by the model for each relevant averaging period

(1-Hour, 3-Hour, 8-Hour, 24-Hour, and Annual). Downwind concentrations calculated by the model were converted into ppm values and added to the background ambient data, then compared to the most stringent standard to determine if the project will cause an exceedence of an air quality standard. For pollutants where the region is already in violation of air quality standards, the levels of significant increase as defined in SCAQMD Rule 1303 were used to determine significance. SCAQMD has not yet defines a level of significance for $PM_{2.5}$.

Normal Facility Operations

The AQIA included several different plant operating scenarios. The first scenario evaluated was a normal year of operation. This included the following; (1) 1-hour NO_X and CO emission rates were based on a startup emissions scenario, which is the most conservative estimate; (2) annual NO_x emission estimates are an average that take into account typical startup, shutdown, maintenance and normal operation during the course of an operation year divided by 8760 hours; (3) 8-hour CO emission estimates reflect four hours of startup, shutdown, and four hours of operation. Short-term impacts from maintenance operations are equal to the short-term impacts that are identified for commissioning operations in the following section of this report.

Table 6.1.35 includes a summary of the air quality impact analysis for operations during a normal year. Background ambient data reflect the highest levels recorded for the applicable averaging period at the Rubidoux, Riverside and Norco monitoring stations between the years of 1997 and 2003. The analysis results indicate that when combined with background ambient concentrations, the projects emissions will not lead to a violation of state or federal standards for NO_2, CO, Sulfates and 1-hour SO_2.

Ambient levels of PM are already in excess of the most stringent 24-hour and annual ambient air quality standards. SCAQMD has established thresholds for PM_{10} increases to determine the significance of a project's impacts. For the 24-hour average the SCAQMD level of significance is 2.5 $\mu g/m^3$ increase. The 24-hour increase from the project is projected to be 1.7970 $\mu g/m^3$. For the annual average increase, the SCAQMD level of significance is 1.0 $\mu g/m^3$. The annual average increase from the project is expected to be 0.1871 $\mu g/m^3$. SCAQMD has not yet established significance thresholds in Rule 1303 for $PM_{2.5}$, but the increase in ambient levels of $PM_{2.5}$ are less than 3 percent of the most stringent 24-hour standard and less than 0.4 percent of the most stringent annual standard.

The year 2000 ambient data for 24-hour SO_2 concentrations implies that the region is already exceeding the most stringent standard. As such, the impact from the project would add to an existing exceedence, but the impact from the project is less than 1 percent of the ambient air quality standard. One must also consider the anomaly that exists in the year 2000 data. The year 2000 results are twice as high as the results in any of the three years preceding 2000, and of the three years following 2000. Based upon the second highest background levels from 1997 through 2003, the project would not cause an exceedence of the most stringent 24-hour air quality standard.

The air quality impact analysis demonstrates that the project will not lead to, or significantly add to, an exceedence of the most stringent air quality standards when both turbines and the cooling tower are in full operation, including startup operations. The project's ambient air quality impacts are demonstrated to be below a level of significance.

Table 6.1-35 Summary of Air Quality Impact Analysis Normal Operations

Point of Maximum Impact – MEI						
Pollutant	Averaging Time	Project Impacts	Ambient Background	Year of Maximum Background	Total Impacts (Project + Ambient)	Most Stringent Standard
NO_2	1-Hour (ppm)	0.0129	0.15	2001, Rubidoux	0.16	0.25
NO_2	Annual (ppm)	0.00002	0.0262	1999, Rubidoux	0.03	0.0534
CO	1-Hour (ppm)	0.0170	11	1997, Riverside	11.02	20
CO	8-Hour (ppm)	0.0109	5.8	1997, Rubidoux	5.81	9
PM	24-Hour (mg/m3)	1.7970	164	2003, Rubidoux	165.80	50
PM_{10}	Annual (mg/m3)	0.1871	72.3	1999, Rubidoux	72.49	20
$PM_{2.5}$	24-Hour (mg/m3)	1.7970	119.6	2000, Rubidoux	121.40	65
$PM_{2.5}$	Annual (mg/m3)	0.1871	31.1	2001, Rubidoux	31.29	12
Sulfate	24-Hour (mg/m3)	0.9585	11.7	2000, Rubidoux	12.66	25
SO_2	1-Hour (ppm)	0.0009	0.11	2000, Rubidoux	0.11	0.25
SO_2	24-Hour (ppm)	0.0004	0.041	2000, Rubidoux	0.04	0.041

Commissioning Operations

The second air quality impact assessment scenario reflects operations during the commissioning operation year. This analysis includes the following averaging periods; (1) 1-hour NO_X and CO emission rates were based on uncontrolled operations, which is the most conservative estimate. (2) Annual NO_X emission estimates are an average that take into account typical commissioning, startup, shutdown, and normal operation during the course of an operation year divided by 8,760 hours. (3) 8-hour CO emission estimates are an average that take into account typical startup, shutdown, and normal operation during the course of an operation day. Short-term commissioning impacts (1-hr, 3-hr, 8-hr and 24-hr) also reflect impacts that would occur during subsequent maintenance operations.

Table 6.1.36 provides a summary of the air quality impact analysis for operations during commissioning operations. Analysis results for PM_{10}, $PM_{2.5}$, sulfates and SO_2 are the same as for normal operations. Analysis results for NO_2 and CO are higher than the results for normal operations because emission control systems are assumed to be disabled during the 200-hour commissioning period. Even with the higher emissions and with both turbines assumed to be in operation, the project will not cause a violation of short-term ambient air quality standards. The ambient air quality impacts of the project are below a level of significance.

Table 6.1-36 Summary of Air Quality Impact Analysis Commission Operations

Point of Maximum Impact – MEI						
Pollutant	**Averaging Time**	**Project Impacts**	**Ambient Background**	**Year of Maximum Background**	**Total Impacts (Project + Ambient)**	**Most Stringent Standard**
NO_2	1-Hour (ppm)	0.035	0.15	2001, Rubidoux	0.185	0.25
NO_2	Annual (ppm)	0.00004	0.03	1999, Rubidoux	0.026	0.0534
CO	1-Hour (ppm)	0.059	11.0	1997, Riverside	11.1	20.0
CO	8-Hour (ppm)	0.041	5.8	1997, Rubidoux	5.8	9.0
PM	24-Hour (mg/m3)	1.797	164.0	2003, Rubidoux	165.8	50.0*
PM_{10}	Annual (mg/m3)	0.187	72.30	1999, Rubidoux	72.5	20.0**
$PM_{2.5}$	24-Hour (mg/m3)	1.797	119.6	2000, Rubidoux	121.4	65.0*
$PM_{2.5}$	Annual (mg/m3)	0.187	31.10	2001, Rubidoux	31.3	12.0**
Sulfate	24-Hour (mg/m3)	0.959	11.700	2000, Rubidoux	12.66	25.00
SO_2	1-Hour (ppm)	0.0009	0.110	2000, Rubidoux	0.11	0.25
SO_2	24-Hour (ppm)	0.0004	0.041	2000, Rubidoux	0.04	0.04

Fumigation Analysis

In accordance with CEC guidance, a third impact analysis was conducted to assess the potential short-term air quality impacts under fumigation conditions. Fumigation occurs when an exhaust plume is emitted into a strong low level inversion layer (stable conditions), resulting in a rapid mixing of pollutants toward the ground. The low mixing height that results from this condition allows little diffusion of the exhaust plume prior to its downwind contact with the ground.

The fumigation model was conducted using the U.S. EPA SCREEN3 air dispersion model. Fumigation conditions are expected to last less than one hour, so the model reflects only 1one-hour impacts.

Table 6.1.37 includes a summary of the short-term impacts of the project under fumigation conditions.

Table 6.1-37 Summary of Air Quality Impact Analysis Fumigation Conditions

Point of Maximum Impact – MEI						
Pollutant	**Averaging Time**	**Project Impacts**	**Ambient Background**	**Year of Maximum Background**	**Total Impacts (Project + Ambient)**	**Most Stringent Standard**
NO_2	1 - Hour (ppm)	0.006	0.15	2001, Rubidoux	0.156	0.25
CO	1 - Hour (ppm)	0.011	11.0	1997, Riverside	11.0	20.0
SO_2	1-hour (ppm)	0.0002	0.110	2000, Rubidoux	0.11	0.25

Prevention of Significant Deterioration

The Prevention of Significant Deterioration (PSD) program was established to allow emission increases (increments of consumption) that do not result in significant deterioration of ambient air quality in areas where criteria pollutants have not exceeded the National Ambient Air Quality Standards (NAAQS). For the purposes of determining applicability of the PSD program requirements, the following regulatory procedure is used.

Project emissions are evaluated to determine whether the potential increase in emissions will be significant. Because the proposed facility is a new stationary source, the increase in emissions must be major in order to trigger PSD applicability. U.S. EPA considers a potential increase of 250 tons per year of any of the criteria pollutants to be major for the proposed facility. Table 6.1.38 includes a summary of potential annual emissions from the proposed facility and PSD applicability thresholds. The project is not considered a new major source because it does not result in an increase in emissions of any single pollutant exceeding 250 tons per year and further PSD analysis is not required.

Table 6.1-38 Comparison of Emissions Increase with PSD Significant Emissions

Pollutant	Project Emissions (tons per year)	PSD Major Source Threshold (tons per year)	Significant?
PM_{10}	3.9	250	No
VOC	1.3	250	No
NO_x	9.6 (17.7 first year)	250	No
SO_2	2.1	250	No
CO	12.1 (19.9 first year)	250	No

The nearest Class I area is Joshua Tree National Park, approximately 75 km from the proposed project. As discussed above, the proposed project does not trigger PSD review for any pollutant, so a Class I impact analysis is not required in accordance with PSD regulations. No formal analysis of impacts was conducted for this project, but it should be noted that the project impacts listed in Tables 6.1.36 and 6.1.37 are significantly below PSD limits for Class I areas. It is reasonable to conclude that further dispersion of the exhaust plume over the 75 km distance between the proposed facility and the nearest Class I area would result in impacts at the Class I area that are below the level of significance.

6.1.9.3 Air Quality Modeling Methodology – Facility Construction

Air dispersion modeling was conducted to provide down-wind emission concentration estimates from the project during peak construction activities and over the course of the entire construction project using the ISCST3 model. The concentrations were subsequently used in the air quality impact analysis to demonstrate compliance with SCAQMD Rule 1303 (b)(1) and the health risk assessment contained in Section 6.1.8 of this report. The resulting concentrations were also used to determine conformity with SCAQMD's environmental justice initiative for construction impacts.

Air dispersion modeling files are included in Appendix 6.1-H. Terrain and meteorological inputs in the construction dispersion model are the same as those used in the facility operations model. The 10-kilometer nested grid used in the facility operations model was also used for the construction emissions dispersion model. Construction emissions were divided into eight volume sources. Four of the sources reflect combustion emissions and the remaining four sources reflect fugitive PM_{10} emissions sources. A single area source was also identified for wind-entrained dust. The locations of the various sources reflect the distribution of construction activities at the site.

The air dispersion model was run at actual emission rates reflecting worst-case hourly emission rates for NO_X, CO, SO_X, and PM_{10}. The resulting model output was then used to conduct the ambient air quality assessment and health risk assessment. The model set to accommodate the limited period during which construction activities (autumn, winter and spring). The model was also set to reflect an eight-hour workday and a five-day workweek for all sources except the wind-entrained dust source.

6.1.9.4 Ambient Air Quality Impacts – Facility Construction

Table 6.1.39 includes a summary of the air quality impact analysis for construction activities. Detailed air quality impact assessment data are contained in Appendix 6.1-I. Background concentrations for all pollutants are the same as those selected for the air quality impact analysis for facility operations. An ozone limiting method factor was applied to both the 1-hour and annual NO_X impacts to determine NO_2 impacts. The annual factor was provided by SCAQMD modeling staff, and reflected conditions in the area surrounding the construction site. The 1-hour adjustment factor was taken from the South Coast Air Quality Management District Local Significance Threshold Methodology and in coordination with SCAQMD CEQA staff. The adjustment reflects the conversion ratio that would occur in the South Coast Air Basin at a distance of 200 meters from the project. The annual adjustment factor was provided by SCAQMD modeling staff and was equal to the factor used in the facility operations air quality impact assessment.

Maximum concentrations used to make the significance demonstration are located at the north fence line of the project characterized by undeveloped and uninhabited land. Concentrations decrease rapidly as emissions travel from the site, with an approximate 25 percent decrease in ambient concentrations at a distance of only 30-meters from the property line for all pollutants other than PM_{10}. For PM_{10}, short-term concentrations decrease by 38 percent at a distance of 30 meters from the fence line. Appendix 6.1-H contains additional information regarding the dispersion of construction emissions from the site.

Based upon projected maximum daily emissions and total project emissions, the addition of project impacts to background concentrations does not result in an exceedence of the most stringent short-term ambient air quality standard for SO_2 and all ambient air quality standards for NO_2, CO and sulfate. The standards that are used in the analysis are also the same standards that SCAQMD has proposed as voluntary localized significance thresholds.

Background 24-hour SO_2 concentrations were the most stringent air quality standard in 2000 (0.04 ppmv), but results for that year appear to be an anomaly. During most years the high 24-hour ambient SO_2 concentration is are approximately 0.02 ppmv. The increase in SO_2 resulting from the project is less than 0.00004 ppmv. The project will not significantly add to an exceedence of the 24-hour SO_2 standard, based upon the unusually high background concentration recorded in 2000, and would not cause an exceedence, based upon typical background concentrations.

The region surrounding the facility currently exceeds 24-hour and annual ambient standards for PM_{10}, so it is necessary to demonstrate that the project will not significantly contribute to the exceedences. The impacts of the construction project are estimated to be 16.97 $\mu g/m^3$ based upon a maximum 24-hour average and 0.9658 $\mu g/m^3$, based upon an annual arithmetic mean. Model output for the annual mean concentration were scaled to reflect lower average hourly emissions over the course of the project (154 days). The uncorrected air dispersion model results reflect 154 construction days with emission rates equal to the maximum November daily emission rate. Appendix 6.1-I includes the calculation used to scale maximum hourly emissions from November into annual average hourly emissions that were used to determine annual ambient air quality impacts.

As with other impacts, maximum PM concentrations exist at the north fence line of the project and decrease significantly with distance from the project. At a 30-meter distance from the fence line, peak concentrations are only 10.5 $\mu g/m^3$ or 38 percent lower than the fence line concentrations. This level is comparable to SCAQMD's voluntary localized significance threshold of 10.4 $\mu g/m^3$. The annual impact of 0.9658 $\mu g/m^3$ is below the SCAQMD significance threshold of 1.0 $\mu g/m^3$ and is less than 1.5 percent of the ambient background concentration.

Table 6.1-39 Summary of Air Quality Impact Analysis Construction Activities

Point of Maximum Impact – MEI Riverside Energy Resource Center						
Pollutant	**Averaging Time**	**Project Impacts**	**Ambient Background**	**Year of Maximum Background**	**Total Impacts (Project + Ambient)**	**Most Stringent Standard**
NO_2	1 - Hour (ppm)	0.062	0.15	2001, Rubidoux	0.212	0.25
NO_2	Annual (ppm)	0.00525	0.0262	1999, Rubidoux	0.03	0.0534
CO	1 - Hour (ppm)	0.449	11	1997, Riverside	11.4	20.0
CO	8 - Hour (ppm)	0.113	5.8	1997, Rubidoux	5.9	9.0
PM	24 - Hour (μg/m3)	16.97	164	2003, Rubidoux	181.0	50.0
PM_{10}	Annual (μg/m3)	0.97	72.30	1999, Rubidoux	73.27	20.0
Sulfate	24 - Hour (μg/m3)	0.11	11.7	2000, Rubidoux	11.81	25.00
SO_2	1-hour (ppm)	0.00042	0.11	2000, Rubidoux	0.11	0.25
SO_2	24-hour (ppm)	0.00004	0.041	2000, Rubidoux	0.041	0.04

6.1.10 Screening Health Risk Assessment

Two screening health risk assessments were completed for the project in accordance with the California air toxics hot spots act. The first assessment was completed to determine the increase in health risks attributed to the operation of the gas turbines and auxiliary equipment. The second assessment was completed to determine the increase in health risk that could be attributed to diesel emissions during construction of the facility.

The assessments were conducted to determine expected increases in cancer risk as well as chronic and acute health risks. They were completed in accordance with the CAPCOA *Air Toxics "Hot Spots" Program Revised* 1992, *Risk Assessment Guidelines* (October 1993) and with SCAQMD Rule 1401 Toxics New Source Review requirements. The assessment estimates the offsite cancer risk to the maximally exposed individual (MEI), as well as indicating any adverse effects of noncarcinogenic compound emissions.

CARB's Hot Spots Analysis and Reporting Program (HARP) model was used to determine calculate health risks from the project sources. The maximum hourly and annual average impacts from the air dispersion model for the entire facility were used as inputs to the HARP model. Facility specific toxic emission rates were also input into the HARP model.

Pollutant-specific unit risk factors, which the HARP model uses, are the estimated probability of a person contracting cancer as a result of constant exposure to an ambient concentration of 1 ug/m^3 over a 70-year lifetime. Unit risk factors and reference exposure limits specified by the California Office of Environmental Health Hazard Assessment (OEHHA) were used for the assessments.

In accordance with state and local requirements, maximum individual cancer risk (MICR), chronic (long-term) hazard indices, and acute (short-term) hazard indices must be evaluated. For this health risk assessment, these requirements were calculated for the maximally exposed individual (MEI), the highest residential receptor, and the highest commercial receptor. The MEI is a hypothetical receptor located at the point of maximum impact.

MICR Overview:

The MICR is the estimated probability of a potential MEI contracting cancer as a result of exposure to carcinogenic air contaminants over a period of 70 years. The MICR must be calculated as delineated in Rule 1401 and must be less than 1 in one million (1.0×10^{-6}) potential cancer incidents in most circumstances.

Acute Hazard Index Overview:

The acute hazard index (HIA) is the non-cancer health risk due to short-term exposure to non-carcinogenic pollutants over a short time period (usually 1 hour). The HIA must be less than 1.0 in most circumstances.

Chronic Hazard Index Overview:

The chronic hazard index (HIC) is the non-cancer health risk due to exposure to non-carcinogenic pollutants for one year or more. The HIC must be less than 1.0 in most circumstances.

6.1.10.1 Health Risks Resulting from Facility Operations

Table 6.1.40 includes a summary of the screening health risk assessment results for the operation of the facility. Detailed assessment data are included in Appendix 6.1-J. The assessment reflects modeled dispersion rates of toxic pollutants from the two gas turbines and the cooling tower. Emissions from the cooling tower reflect the use of reclaimed water and reflect the presence of chemicals that are typically found in cooling water treatment products. Because the dispersion characteristics of gas turbines differ greatly from those of cooling towers, two screening dispersion-modeling assessments were completed to identify potential MEI locations.

The final dispersion model included two discrete receptors. The location of the first receptor is dominated by the gas turbine emissions. The second receptor location is dominated by the cooling tower emissions. The final analysis indicates that the MEI is dependent upon turbine operations.

The MEI receptor is located at the facility fence line on Payton Avenue. The MICR results reflect a 70-year exposure period with no adjustments for limited workplace exposure. Significance thresholds reflect SCAQMD Rule 1401 standards. Resulting health risks at both receptor locations are well below the established level of significance.

Both short-term and long-term health risk assessment results reflect the operation of both turbines at 100% load 85% organic compound destruction efficiency via the oxidization catalyst. Under these conditions the acute hazard index is 0.00596, versus a significance threshold of 1.0. If the assessment were conducted for both turbines operating at 100% load, but without installation of the oxidization catalyst, the acute hazard index would be 0.0015. These results indicate that both turbines can be operated simultaneously for short periods during commissioning, startup and maintenance operations without causing health impacts in excess of established significance thresholds.

Table 6.1-40 Summary of Health Risk Analysis Generating Station Operations

Point of Maximum Impact – MEI Riverside Energy Resource Center		
Hazard Description	**Results**	**Significance Threshold**
Maximally Exposed Individual Turbine Dominated		
MICR	3.74×10^{-08}	10×10^{-06}
Chronic Hazard Index	0.00261	1.0
Acute Hazard Index	0.00596	1.0
Maximally Exposed Individual Cooling Tower Dominated		
MICR	1.83×10^{-07}	10×10^{-06}
Chronic Hazard Index	0.000282	1.0
Acute Hazard Index	0.000232	1.0

6.1.10.2 Health Risks Resulting from Construction Operations

Table 6.1.41 includes a summary of the results of the screening level health risk assessment for the construction project. The MEI receptor is located at the project fence line on Payton Avenue. The screening level health risk assessment for construction operations reflects daily maximum diesel particulate emissions over the entire duration of the construction project. In accordance with CARB guidelines, the assessment considers both cancer risk and acute health risks. The cancer risk calculations contained in the HARP model reflect a 70-year lifetime exposure. The model results were then divided by 70 in order to more accurately reflect the impacts of a short-term project. The results indicate that health risks attributed to the construction project are well below a level of significance. Detailed assessment data are included in Appendix 6.1-J.

Table 6.1-41 **Summary of Health Risk Analysis Construction Activity Point**

Maximum Impact – MEI Riverside Energy Resource Center		
Hazard Description	**Results**	**Significance Threshold**
<u>*Maximally Exposed Individual*</u>		
MICR	6.22×10^{-07}	10×10^{-06}
Chronic Hazard Index	0.00215	1.0

6.1.11 Laws, Ordinances Regulations and Standards

6.1.10.1 Consistency with Federal Requirements

U.S. EPA has delegated authority to implement and enforce all applicable federal programs other than PSD review to SCAQMD. Consistency with applicable federal requirements such as Title V permits and the Acid Rain Program is met through compliance with SCAQMD regulations. Consistence with these requirements is discussed in Section 6.1.9.3 - Consistency with SCAQMD Regulations.

6.1.11.2 Prevention of Significant Deterioration

The Prevention of Significant Deterioration (PSD) program was established to allow emission increases (increments of consumption) that do not result in significant deterioration of ambient air quality in areas where criteria pollutants have not exceeded the National Ambient Air Quality Standards (NAAQS).

Because the proposed facility is a new stationary source, the increase in emissions must be major in order to trigger PSD applicability. U.S. EPA considers a potential increase of 250 tons per year of any of the criteria pollutants to be major for the proposed facility. Table 6.1.42 includes a summary of potential annual emissions from the proposed facility and PSD applicability thresholds. The project is not considered a new major source because it does not result in an increase in emissions of any single pollutant exceeding 250 tons per year and further PSD analysis is not required. A separate application to U.S. EPA for PSD review is not required. The applicant will submit an overview of the project to U.S. EPA Region IX in order to obtain formal concurrence that the project will not be subject to PSD.

Table 6.1-42 Comparison of Emissions Increase with PSD Significant Emissions

Pollutant	Project Emissions (tons per year)	PSD Major Source Threshold (tons per year)	Significant?
PM_{10}	3.9	250	No
VOC	1.3	250	No
NO_x	9.6 (17.7 first year)	250	No
SO_2	2.1	250	No
CO	12.1 (19.9 first year)	250	No

The nearest Class I area is Joshua Tree National Park, approximately 75 km from the proposed project. As discussed above, the proposed project does not trigger PSD review for any pollutant, so a Class I impact analysis is not required in accordance with PSD regulations. No formal analysis of impacts was conducted for this project, but it should be noted that the project impacts listed in Tables 6.1.35 and 6.1.36 are significantly below PSD limits for Class I areas. It is reasonable to conclude that further dispersion of the exhaust plume over the 75 km distance between the proposed facility and the nearest Class I area would result in impacts at the Class I area that are below the level of significance.

6.1.11.2 Consistency with State of California Requirements

CARB has delegated responsibility for implementing and enforcing all stationary source air quality regulations to SCAQMD. Compliance with SCAQMD regulations ensures consistency with state air quality laws and regulations.

6.1.11.3 Consistency with SCAQMD Regulations

SCAQMD Regulation II

Rule 212: Standards for Approving Permits:

This equipment is not located within 1000 feet of a school, but the proposed facility will have potential NO_X emissions that are in excess of the levels specified in Rule 212 (g). Public notification is required and will be coordinated through SCAQMD.

Rules 218 and 218.1: Continuous Emissions Monitoring:

The turbines will be equipped with continuous emissions monitoring systems (CEMS) to ensure compliance with BACT for NO_X and CO. The portion of the CEMS used to monitor CO is subject to the application, certification and quality assurance requirements of Rules 218 and 218.1. A CEMS vendor has been selected for this system. The proposed CEMS package has been demonstrated to comply with monitoring requirements of applicable SCAQMD and U.S. EPA. The CEMS vendor will submit applications and QA/QC plans and initiate certification testing of the CEMS in accordance with these Rule 218 and 218.1.

SCAQMD Regulation IV – Prohibitory Rules

Rule 401: Visible Emissions:

The opacity limits established in Rule 401 are not expected to be exceeded since the equipment will be fired on natural gas. Compliance with Rule 401 is expected.

Rule 402: Nuisance:

Based upon experience with similar equipment, operation of this system is not expected to emit air contaminants so as to cause a nuisance. Compliance with Rule 402 is expected.

Rule 403: Fugitive Dust

Because the project does not meet the definition of a medium or large construction operation, no construction plans are required to be submitted to SCAQMD. Paragraph (d)(4) specifies that PM_{10} levels cannot exceed 50 $\mu g/m^3$ over a 5-hour period. Paragraph (h)(4) specifies that the project is exempt from the 50 $\mu g/m^3$ limit as long as certain mitigation measures are taken.

SCAQMD has subsequently determined that a 24-hour concentration of 10.4 $\mu g/m^3$ is equivalent to the 5-hour standard of Rule 403. The construction AQIA indicates that the 24-hour impact may exceed 16 $\mu g/m^3$ during the grading phase of the operation, but that impacts are at a point just to the north of the northern fence line in an area that will not be developed or inhabited during the course of the construction project. At a distance of approximately 30 meters from the fence line, the concentration of PM_{10} emissions decreases to a level below 10.4 $\mu g/m^3$.

If required by SCAQMD, the applicant will comply with the exemption requirements during grading operations to demonstrate compliance with Rule 403. Such requirements include watering daily when earthmoving exists at a point more than 100 feet from property fence lines. For operations near fence lines, the applicant will either curtail operations during periods when exceedences are likely to occur, or will maintain soil moisture content to a minimum of 12 percent. Compliance with the 12 percent standard will be demonstrated through daily soil samples.

Rule 404: Particulate Matter – Concentration

Rue 404 specifies that particulate matter grain loading not exceed a level of 0.0271 grains/dscfm for exhaust flows of 176,600 dscfm. Grain loading cannot exceed 0.0253 grains/dscfm for exhaust flows of 211,900 dscfm. The proposed turbines are guaranteed to emit no more than three pounds (21,000 grains) of PM_{10} per hour and have an exhaust flow of 193,164. The resulting grain loading rate of 0.0018 grains/dscfm is well within the limit of Rule 404.

Rule 431.1 Sulfur Content of Gaseous Fuels:

The equipment proposed for this project will be fired on pipeline quality natural gas. Compliance with Rule 431.1 is expected.

SCAQMD Regulation IX

Subpart GG – Standards of Performance for Stationary Gas Turbines:

Based upon performance characteristics for the turbine model, the maximum NO_X concentration allowable under Subpart GG is 0.0235 percent of exhaust volume at 15 percent O_2. The turbines are expected to emit NO_X at a rate of less than 0.0025 percent of exhaust volume at 15 percent O_2. Compliance with Subpart GG is expected.

SCAQMD Regulation XI

Rule 1134: Emissions of Oxides of Nitrogen from Stationary Gas Turbines

New turbines and reclaim sources are exempt from Rule 1134.

SCAQMD Regulation XIII and Regulation XX New Source Review

Rule 1303 and Rule 2005: Best Available Control Technology (BACT):

BACT for non-emergency simple cycle gas turbines generally consists of 2.5 ppmv for NO_x and 6 ppmv for CO, based upon recently permitted turbines in the San Joaquin Valley Unified Air Pollution Control District and by CEC. The proposed levels also reflect pending BACT guidance that SCAQMD is proposing for simple cycle gas turbines that are permitted at non-major source facilities. The proposed installation of SCR and CO oxidation units will meet achieved in practice BACT. CEMS will be installed pursuant to Rules 218, 218.1 and 2012 to ensure BACT compliance.

Rule 1303 and Rule 2005: Modeling:

Modeling as required by SCAQMD Rules 1303 and 2005 was performed to demonstrate no unacceptable increase in ambient NO_2, CO, PM and SO_2 emission concentrations. Detailed information regarding the modeling for this project can be found in Section 6.1.7 and Appendices 6.1-F and 6.1-G of this report.

CEC and SCAQMD conducted a search of all permits issued within a six-mile radius within the last year and found that no permits that would constitute an emissions increase have been issued within a one-year period. CEC subsequently concluded that the cumulative impact analysis is not warranted. Correspondence related to the search and CEC's determination are included in Appendix 6.1-G.

Rule 1303 and 1304: Emission Offsets:

Potential annual emissions of CO, ROG, SO_X and PM_{10} from the proposed equipment, combined with limits upon annual operating hours will be below the emission offsets threshold stipulated in Rule 1303(b)(2). Offsets will be required in accordance with Rule 2005 for all potential NO_X emissions, including emissions from emergency equipment. At a minimum, the City will secure adequate RECLAIM Trading Credits (RTCs) to offset the first year's operations prior to initiating operation of the facility. Offset purchases may be expedited if mandated by CEC as a mitigation measure to insure issuance of the small power plant exemption.

The City will be required to surrender 19,206 RTCs to offset emissions during normal operating years, based upon proposed operations. For the first operating year, additional offsets will be required to offset increased emissions during turbine commissioning and to account for any operations that occur prior to CEMS certification tests in accordance with Rule 2010. Estimated first-year NO_X emissions are 35,420 pounds, due to the allocated 200-hour commissioning period. The City proposes to complete CEMS certification tests within 250 hours of operations. Additional RTCs will be needed to accommodate the 50 hours of operations between commissioning operations and final certification for each turbine. The hourly NO_X emission differential is 40.44 pounds per turbine (44.93 pounds uncontrolled, minus 4.49 pounds controlled). Total NO_X offset requirements for the first year of operation is 39,464 pounds (35,420 pounds, plus 40.44 pounds per hour, multiplied by 100 hours).

Emission increases for other pollutants are below SCAQMD offset thresholds, so the applicant is eligible to receive offset credits directly from SCAQMD pursuant to SCAQMD Regulation XIII. The offsets come from otherwise unclaimed emission decreases from facility closures and permit expirations. Prior to making the credits available for new sources, they are discounted by 20% to 80%. Additionally, when SCAQMD applies the credits to a new source, it does so at a ratio pf 1.2:1.

SCAQMD Regulation XIV

Rule 1401: New Source Review of Toxic Air Contaminants:

As required in SCAQMD Rule 1401, a Tier III screening risk assessment was performed to demonstrate compliance with Rule 1401(d). The projected increase in cancer risk due to the project is 1.83×10^{-7}, which is significantly below the SCAQMD threshold of 1×10^{-6}. The acute and chronic health indices for the project are 0.157 and 0.00261, respectively. These results are significantly below the SCAQMD standard of 1.0. Detailed results of the risk screening assessment are contained in Section 6.1.8 and Appendix 6.1-J of this report.

SCAQMD Regulation XVII

Rule 1701: Prevention of Significant Deterioration (general):

Because U.S. EPA has not approved SCAQMD Regulation XVII, PSD is implemented pursuant to CFR 40, Parts 51 and 52. The proposed facility does not result in an increase in emissions in excess of 250 tons per year and does not qualify as a major modification at an existing major source. The facility also is not within 10 km of a class I area and is not expected to impact such an area by 1.0 $\mu g/m^3$.

SCAQMD Regulation XX

The proposed facility is subject to Regulation XX – RECLAIM. All NO_X emissions from the facility will be offset through the purchase of RTCs. The turbines are major RECLAIM sources and will be equipped with continuous emissions monitoring systems (CEMS) in accordance with SCAQMD Rule 2012.

SCAQMD Regulation XXX

Rule 3001: Title V Permit Applicability:

Emissions from the facility exceed major source thresholds specified in Rule 3001(a) and the proposed gas turbines are subject to 40 CFR 60, Subpart GG. The facility is subject to Title V pursuant to Rule 3001(c)(5). A Title V permit will be issued and administered through SCAQMD Regulation XXX.

Acid Rain Permit Program

The proposed facility is subject to Part 72, Chapter I, Title 40 of the CFR, which is administered by SCAQMD through Regulation XXXI.

6.1.12 Summary and Conclusions

An evaluation was conducted to determine applicable air quality regulations affecting the construction and operation of the proposed power generating station. Toxic pollutant and criteria pollutant emission inventories were compiled for both the construction and operating phases of the project. The inventories served as the foundation for detailed air quality impact assessments and screening level health risk assessments. Based upon the results of the assessments, a regulatory conformity assessment was conducted. Results of the emission inventories and the various assessments were also compared with established thresholds for determining the significance of environmental impacts. Where warranted, mitigation measures attributed to regulatory compliance or to voluntary actions to be taken by the applicant are identified.

The results of the analyses contained in this report indicate that air quality impacts resulting from the proposed project can be adequately mitigated to levels and will be below established levels of significance. Table 6.1.43 includes CEC's environmental checklist for air quality impacts.

Table 6.1-43 Air Quality Environmental Impact Checklist

AIR QUALITY - Would the project:	Potentially Significant Impact	Less than Significant w/Mitigation	Less than Significant	No Impact
a.. Conflict with or obstruct implementation of the applicable air quality plan?	-	-	X	-
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	-	X	-	-

AIR QUALITY - Would the project:	Potentially Significant Impact	Less than Significant w/Mitigation	Less than Significant	No Impact
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	-	X	-	-
d. Expose sensitive receptors to substantial pollutant concentrations?	-	X	-	-
e. Create objectionable odors affecting a substantial number of people?	-	-	X	-

6.1.13 References

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